

Development of a Social Impact Assessment methodology and its application to Waste for Life in Buenos Aires



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Abstract

Cartoneros, or waste pickers, are informal workers who collect recyclable materials from bags of rubbish left in the street. *Cartoneros* sort and sell these materials as their sole source of income, which puts them below the official government poverty line. Approximately 20,000 people currently work as *cartoneros* in Buenos Aires, either individually or in cooperatives. Waste for Life (WfL) is a non-profit organisation working to develop poverty reducing solutions to environmental problems. WfL has developed a low-cost hot-press which processes low value plastic (plastic bags) and fibre (paper) into a composite material. Through the use of the hot press WfL intends to assist *cartonero* cooperatives to increase their income, and assist them to become more autonomous and self-sufficient.

This study presents the results of a Social Impact Assessment (SIA) conducted of WfL's potential involvement with cooperatives in Buenos Aires. SIA is the process of identifying, in advance, the potential social impacts resulting from a project or policy change. The purpose of an SIA is to address the question of "who benefits and who loses" from the implementation of a proposal, which may determine whether the proposal should proceed and inform mitigation strategies for any potential negative impacts. A review of published methodologies was used to compile a summary methodology which was adapted to form an SIA methodology relevant to specific projects.

Qualitative data was obtained from two sources; video interviews with stakeholders in Buenos Aires, and responses by experts to a questionnaire developed by the SIA practitioner. A review of this data identified 31 potential social impacts of WfL's project including economic, health and social wellbeing, institutional, liveability, family and community effects. These impacts were assessed and classified as either of major, moderate or minor significance. Results indicate that the project has the potential to cause significant benefits to a number of stakeholders, particularly the cooperatives, although does present economic and safety risks. Mitigation strategies developed include conducting a thorough market analysis and providing sufficient training to users of the hot press. Appraisal of the methodology developed to conduct the SIA concluded that the flexibility is beneficial to the practitioner although steps should be carefully selected to maintain integrity of the SIA.

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Glossary

- Cartoneros** Informal workers who collect and sell recyclable materials as their sole source of income
- Cooperative** An autonomous group of people who join together voluntarily to achieve common economic, social and cultural needs and aspirations
- Green Point** A cooperative chosen by the government to receive waste from one of the trucking companies in a facility built by the company with government funding
- Social Impact** A change to people's way of life, culture, political systems, environment, health and wellbeing, personal and property rights or fears and aspirations
- Social Impact Assessment** The process of identifying and assessing, in advance, the social impacts of a proposal
- Transmission Channel** A pathway by which social impacts are transferred to and between stakeholders
- Waste for Life** A loosely joined network of professionals and students working to develop poverty-reducing solutions to environmental problems

Abbreviations

CEAMSE	Coordinación Ecológica Area Metropolitana Sociedad del Estado (Ecological Coordination Society of the State Metropolitan Area)
CEP	Centro Experimental de la Produccion (Centre for Experimental Production)
DPGRU	Dirección General de Políticas de Reciclado Urbano (Directorate General of Urban Recycling Policy)
ERT	Empresas Recuperadas por ses Trabajadores (Worker-recuperated Enterprises)
FADU	Facultad de Arquitectura, Diseño y Urbanismo (Faculty of Architecture, Design and Urbanism)
MTE	Movimiento de Trabajadores Excluidos (Excluded Workers Movement)
NGO	Non-government organisation
NPO	Not-for-profit organisation
QU	Queens University
RISD	Rhode Island School of Design
SIA	Social Impact Assessment
UBA	University of Buenos Aires
UST	Union Solidaria de Trabajadores (Workers Solidarity Union)
WfL	Waste for Life

1 Introduction

Within many major cities throughout the world, such as Mexico City, Cairo, Calcutta, Manila, Jakarta and Bangkok, there are people who scavenge materials from waste as their sole source of income (Medina, 2000). In Buenos Aires in Argentina, these informal workers are known as *cartoneros*, or 'cardboard pickers' (Baillie & Feinblatt 2010). They collect recyclables, including cardboard, paper, plastics, metals and other materials (Bijlsma and Hordijk, 2009), from bags of waste left in the street. Some *cartoneros* have formed themselves into cooperatives. The International Co-operative Alliance (2010) defines a cooperative as "*an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise*". Cooperatives are based on the values of self-help, self-responsibility, democracy, equality, equity and solidarity (International Co-operative Alliance, 2007).

Waste for Life (WfL) is a loosely joined network of professionals and students working to develop poverty-reducing solutions to environmental problems. In Buenos Aires, WfL is proposing to assist *cartonero* cooperatives by providing them with technical knowledge and assistance accessing microcredit and markets. Despite having positive intentions, development projects such as WfL's have the potential to cause unintended consequences, and development agencies have been criticised for moving too quickly, without fully assessing the implications of their projects (Finsterbusch et al., 1990).

Social Impact Assessment (SIA) is the process of assessing the potential social impacts of a proposal. The objective of an SIA is to ensure that the benefits of a development project are maximised and the costs minimised, especially costs borne by people (Vanclay, 2003b). In the event that the costs of a project are found to exceed the benefits, the implementing agency should consider the delay or suspension of a project (The World Bank, 2003).

1.1 Project Aims

This project was conducted to achieve two main aims:

1. To develop a methodology to conduct an SIA and perform an appraisal following its application; and
2. To use an SIA to predict the social impacts of Waste for Life in Buenos Aires on all stakeholders, including individuals, groups and organisations.

The outcomes of the project have been used to develop recommendations to WfL and future SIA practitioners.

1.2 Report Synopsis

Chapter 2 provides background information on the two main subject areas of this project, SIA and WfL's proposal. **Sections 2.1 to 2.8** contain an overview of SIA and how it is conducted, including a review of published methodologies. **Section 2.9** describes the context of the proposal, including the geography and government, relevant organisations and situation of the *cartoneros* of Buenos Aires. Finally, **Section 2.10** introduces WfL, the proposal being assessed and its intended benefits.

The methodology developed to conduct the SIA is described in **Chapter 3**. This includes justification of the methodological approach chosen and the inclusion or exclusion of various steps in the methodology. The methods employed to obtain data for the SIA are also described.

Chapter 4 presents the results of each of the steps conducted. This includes the initial steps of scoping and problem identification, profiling and identifying transmission channels. The social impacts and risks identified are presented and assessed. Mitigation strategies for negative impacts are then described, followed by an evaluation of the social impacts.

The results of the SIA and the methodology used are discussed in **Chapter 5**. This includes identifying the assumptions and limitations associated with the SIA results, and an appraisal of the methodology. Finally, **Chapter 6** presents the conclusions and recommendations resulting from the project, relating to both the WfL proposal and the SIA methodology.

2 Literature Review

2.1 Social Impact Assessment

It is widely agreed that the origin of formal SIAs is the US National Environmental Policy (NEP) Act, which was passed in 1969 (Becker and Vanclay, 2003, Finsterbusch, 1995, Wildman and Baker, 1985). The NEP Act required Environmental Impact Statements (EISs) to be prepared for “*actions significantly affecting the quality of the human environment*”, which includes using social sciences, to influence planning and decision making (Wildman and Baker, 1985, p11). As a result, during the 1970s, many SIAs were incorporated into EISs (Finsterbusch, 1995).

While there is not a single precise definition for SIA, it has been defined as “*the process of assessing or estimating in advance the social consequences that are likely to follow from specific policy actions or project developments*” (Barrow, 2000, p4, Joyce and Macfarlane, 2001, p5). As well as social impacts, SIA may also assess the cultural, demographic and economic consequences of a proposal on all major stakeholders (Burdge, 2004). SIA is designed to be an anticipatory process, and should therefore be conducted ex-ante, or before the implementation of a project (Macfarlane, 1999, Nicaise and Holman, 2008, Wolf, 1983). In essence, an SIA is conducted to address the question of “*Who benefits and who loses?*” (determining impact equity) from the implementation of a proposal (Barrow, 2000, Wolf, 1983). Burdge (2004) states that a properly done SIA should also answer the following questions:

- *What will happen if a proposed action were to be implemented – why, when and where?*
- *Who is being affected?*
- *What will change under different alternatives?*
- *How can adverse impacts be avoided or mitigated and benefits enhanced?*

2.2 Benefits of SIA

Conducting an SIA provides benefits to both the implementing organisation and to the stakeholders involved. The United Nations Environment Program’s (UNEP’s) Social Impact Assessment Training Manual (2002) states that the potential benefits of SIA include:

- Reduced impact on communities or individuals;
- Enhanced benefits to those affected;
- Avoiding delays and obstruction;
- Lowered costs;
- Better community and stakeholder relationships; and

- Improved proposals.

Vanclay (2003a) also notes that SIAs maximise benefits and minimise costs, outcomes which are demonstrated by the economic consequences of the project. An evaluation of 68 World Bank development projects found that those which were socioculturally compatible, and based on adequate understanding and analysis of social conditions, delivered economic rates of return of more than twice those that were socially incompatible and poorly analysed (Kottak, cited in Finsterbusch, 1995).

In regards to reducing negative impacts to stakeholders, Vanclay (2003a, p7) states that the “*differential distribution of impacts among different groups in society, and particularly the impact burden experienced by vulnerable groups in the community, is of prime concern*”. Despite it being the intention of most development agencies to assist these vulnerable groups, criticisms of development agencies include:

"doing the wrong things and doing things in the wrong way" (Finsterbusch, 1995, p240);
"helping the rich more than the poor" (Nelson (1985), cited in Finsterbusch, 1995, p240); and
"starting event chains that have unanticipated and unaddressed serious negative social impacts" (Paddocks (1973), and Kottak (1985), cited in Finsterbusch, 1995, p240).

Finsterbusch (1995) encourages the use of SIA by development agencies to address these problems.

2.3 Defining Social Impacts

Within the literature, there are notable discrepancies regarding what constitutes a social impact (van Schooten et al., 2003). A social impact may be defined as “*a physical or perceptual impact experienced by humans either at the individual level or at higher aggregation levels*” (Vanclay, cited in Sutheerawatthana and Minato, 2010, p.121). More specifically, Vanclay (cited in Becker and Vanclay, 2003) describes social impacts as changes to people’s:

- Way of life;
- Culture;
- Political systems;
- Environment;
- Health and wellbeing;
- Personal and property rights; and/ or
- Fears and aspirations.

Other sources group social impacts into similar categories. Those given by van Schooten et al. (2003) include quality of the living environment (liveability); cultural impacts; institutional, legal, political and equity impacts; health and social wellbeing; economic impacts and material wellbeing; family and community; and gender relations. Alternatively, the Centre for Good Governance (2006) presents five overlapping types: lifestyle, cultural, community, quality of life, and health impacts.

Until recently, the difference between social impacts and social change processes (also termed transmission channels), had not been identified (van Schooten et al., 2003, Vanclay, 2002). Transmission channels are the ways “*by which the analyst expects a particular policy change to impact various stakeholder groups*” (The World Bank, 2003, p12). It is important to distinguish transmission channels from social impacts to prevent the channels being identified as impacts themselves (Sutheerawatthana and Minato, 2010). In a similar manner to social impacts, transmission channels may be grouped into a number of different categories. Van Schooten et al. (2003) list six channels (demographic, economic, geographic, institutional and legal, emancipator and empowerment and socialcultural), to which Vanclay (2002) adds “other processes”, which take into account new technologies or social phenomena that may not fall within the previous channels. The World Bank (2003) identifies five more economically focussed transmission channels (employment, prices, access to goods and services, assets, and transfers and taxes). A report published by the Asian Development Bank also includes authority as a transmission channel (Kasmann, 2009).

The magnitude of social impacts may be monitored by recording changes to social impact variables. In 1994, the Interorganizational Committee on Guidelines and Principles for Social Impact Assessment’s Guidelines and Principles (Interorganizational Committee), included a list of 30 variables grouped into five categories, as shown in **Table 1**. In the same year, Rabel Burdge, a member of the Interorganizational Committee, published a similar list of 26 variables, arranged into similar groups (Vanclay, 2002). The most recent US Principles and Guidelines document published by the Interorganizational Committee (2003) included a list of 32 variables, again grouped into five similar categories. The social impact variables listed by both sources are shown in **Table 1**.

Table 1 Social Impact Assessment variables

Burdge (cited in Vanclay 2002)	Interorganizational Committee	
	1994	2003
Population change (demographic effects)	Population change	
Population characteristics	Population Change	Population size density & change
Dissimilarity in age, gender, racial or ethnic composition (ethnic and racial distribution)	Ethnic and racial distribution	Ethnic & racial composition & distribution
Relocated populations	Relocated populations	Relocating people
Influx or outflow of temporary workers	Influx or outflows of temporary workers	Influx & outflows of temporaries
Seasonal (leisure) residents	Seasonal residents	Presence of seasonal residents
Community & institutional structures (public involvement)	Community & institutional structures	
Formation of attitudes towards the project (voluntary associations)	Voluntary associations	Voluntary associations
Interest group activity	Interest group activity	Interest group activity
Alteration in size and structure of local government	Size and structure of local government	Size & structure of local government
Presence of planning and zoning activity	Historical experience with change	Historical experience with change
Industrial/ commercial diversity	Employment/ income characteristics	Employment/ income characteristics
Enhanced economic inequities	Employment equity of minority groups	Employment equity of disadvantaged groups
Employment equity of minority groups	Local/ regional/ national linkages	Local/ regional/ national linkages
Changing occupational opportunities	Industrial/ commercial diversity	Industrial/ commercial diversity
-	Presence of planning and zoning activity	Presence of planning & zoning
Conflicts between local residents and newcomers	Political & social resources	
Presence of an outside agency	Distribution of power and authority	Distribution of power & authority
Introduction of new social classes	-	Conflict newcomers & old-timers
Change in the commercial/ industrial focus of the community	Identification of stakeholders	Identification of stakeholders
Presence of weekend residents (recreational)	Interested and affected publics	Interested and affected parties
-	Leadership capability and characteristics	Leadership capability & characteristics
-	-	Interorganizational cooperation

Individual and family changes (cultural effects)	Individual and family changes	Community and family changes
Disruption in daily living movement patterns	Perceptions of risk, health, and safety	Perceptions of risk, health & safety
Dissimilarities in religious practices	Displacement/ relocation concerns	Displacement/ relocation concerns
Alteration in family structure	Trust in political and social institutions	Trust in political & social institutions
Disruption of social networks	Residential stability	Residential stability
Perceptions about public health and safety	Density of acquaintanceship	Density of acquaintanceships
Change in leisure opportunities	Attitudes toward policy/ project	Attitudes toward proposed action
-	Family and friendship networks	Family & friendship networks
-	Concerns about social well-being	Concerns about social well-being
Community resources (infrastructure needs)	Community resources	
Change in community infrastructure	Change in community infrastructure	Change in community infrastructure
-	Native American tribes	Indigenous populations
Land acquisition and disposal	Land use patterns	Changing land use patterns
Effects on known cultural, historical and archaeological resources	Effects on cultural, historical, and archaeological resources	Effects on cultural, historical, sacred & archaeological resources

In an assessment of lists of social impact variable lists, Vanclay (2002) found that SIA researchers are reluctant to provide lists due to the variability and importance of the specific context of each SIA. For example, Project Huntly, an assessment of the socioeconomic impacts of a large power station in New Zealand, used 98 variables (Carley, 1983), vastly exceeding any published lists. The Interorganizational Committee's list was found to emphasise empirical variables, contradicting the principle contained within the same document stating that the assessment should “*deal with issues and public concerns that really count, not those that are just easy to count*” (p19). Vanclay (2002) stresses that the lists should not be mistaken as a list of impacts as some may be irrelevant, while others are not identified. The Interorganizational Committee (2003) acknowledges this issue by noting that the list of variables is merely suggestive and should only be used as a starting point. Despite the arguments against the use of a checklist, Vanclay does concede that a list may increase awareness of the full range of social impacts, thereby improving the assessment.

2.4 SIA Practitioners

The Interorganizational Committee (1994) has a list of 9 principles which provide a benchmark for conducting SIA. One of these is the use of qualified SIA practitioners. Using social scientists

with the appropriate skills, experience, and training to conduct the assessment will provide the best results, by identifying the full range of important impacts and selecting the most appropriate assessment procedure (Barrow, 2000, The Interorganizational Committee on Principles and Guidelines for Social Impact Assessment, 2003). The Interorganizational Committee (2003) also notes the importance of the practitioner having an understanding of the technical and biological aspects of the project, and being familiar with the cultural and procedural context of the implementing organisation.

2.5 Methodological Approaches

There are two main approaches taken to conduct SIAs: technocratic or participatory. These approaches differ in the type and source of data collected and the data collection and assessment techniques used. In essence, the technocratic approach focuses on objective, measurable indicators and assessment is made by ‘experts’, often the SIA practitioner, while the participatory approach emphasises the use of local knowledge to assess perceived impacts (Fenton, 2005). A comparison between the data characteristics of each approach is shown in

Table 2

Table 2 Comparison of data characteristics in technocratic and participatory approaches

Data Characteristics	Technocratic	Participatory
Nature	Value-free (objective)	Value-laden (subjective)
Source	Expert	Community
Type	Quantitative	Qualitative
Scope	Nomothetic (trends in variables based on patterns assumed to stay constant)	Idiographic (consideration given to specific political and cultural setting)

Source: (Macfarlane, 1999)

While the technocratic method is more popular in practice, the quantitative nature of this approach creates the potential for the social factors, critical to determining a project’s success, to be ignored or misrepresented (Macfarlane, 1999). Macfarlane (1999, p70) also found that the technocratic approach “*provides inadequate insight into the complexities of the social environment*”. In addition, the objectivity of the approach separates the practitioner from the subject, which may cause the assessors to be more sensitive to the needs of the client (Macfarlane, 1999).

In contrast, the participatory approach emphasises community concerns and uses the knowledge and experiences of those most affected by the proposed development as the basis for determining impacts (Becker et al 2004). The lack of active, effective and lasting participation of the intended beneficiaries in development projects is the main problem with many that are ultimately unsuccessful (Van Heck, 2003). Macfarlane (1999) notes however, that while it is

reasonable to involve local people in SIA, it is important to assess subjective data to ensure that actual social consequences are identified, as opposed to opinions and perceptions. The benefits and potential failings of utilising local knowledge as a data source in SIA are discussed further in **Section 2.6.1**.

To capitalise on the strengths and address the weaknesses each approach, an integrative approach, which lies between the technocratic and participatory approaches, is being used increasingly (Macfarlane, 1999). In an investigation into the future practice of SIA, Burdge and Vanclay (2004) note that integrating the technocratic and participatory approaches to SIA is one of the methods of improving the application of SIA.

2.6 Data Sources

As shown in **Table 3**, SIA data can be obtained from a multitude of sources. These sources are classified as either secondary (existing information) or primary (obtained/ conducted for the specific SIA). Wildman and Baker (1985, p51) state that the SIA practitioner should “*integrate a number of viewpoints from documents, discussions and field work*”, which can be achieved through the selection of appropriate data sources.

Table 3 Examples of data sources for Social Impact Assessments

	Quantitative data	Qualitative data
Secondary sources	Previous surveys Census data Official statistics Monitoring studies Maps	Local histories/ accounts Previous studies/ SIAs Other literature Newspapers Photos, video, film Maps
Primary sources	Sample surveys Observations	Interviews Discussion/ focus groups Workshops Participant observation Photos, video, film

Source: Becker and Vanclay (2003, p145)

For many of the sources of qualitative data, the practitioner is able to select the people or groups from whom data is collected. The use of locals or experts to provide information is discussed below.

2.6.1 Local Knowledge

Local knowledge has been defined by Baines et al (2003, p26) as “*information and understanding about the state of the biophysical and social environments that has been acquired by the people of a community which hosts (or will host) a particular project or programme*”. Incorporating local

knowledge is an important factor in the success of a proposal and legitimises the SIA process (Burdge and Vanclay, 2004). It has even been stated that a SIA cannot be effective without incorporating input from affected and interested parties (Tang et al., 2008). Macfarlane (1999) holds the view that many assessors merely ‘pay lip service’ to participation. In a recent publication, Esteves and Vanclay (2009, p141) suggest that “*genuinely valuing local knowledge runs counter to the conventional approach in the mining industry where expert opinions are sought*”.

It makes good sense, however, that people with local knowledge, including those potentially affected by a proposal, would be in a good position to predict impacts, and that their involvement would enhance the benefits resulting from the SIA. Using local knowledge to predict impacts is acceptable, but care should be taken to ensure accuracy of results. Macfarlane (1999) states the importance of distinguishing opinion from actual social consequences, while Finsterbusch reports that “*citizens often predict their responses [to project impacts] inaccurately*” (cited in Macfarlane, 1999, p74). When using local knowledge to predict impacts, it is important to consider the level of knowledge of the person(s) providing information (Finsterbusch et al., 1983).

Another important consideration is whether individual contributions are representative of the community or particular groups (Esteves and Vanclay, 2009). It is often the case that the very poor “*lack the time or resources or incentive to consider the future beyond strategies for their immediate survival*” (Macfarlane, 1999, p73). These people are also likely to have the least ability to adapt to changes resulting from a proposed action.

2.6.2 Expert Judgement

In addition to the use of local knowledge, experts may be engaged to provide data for the SIA. ‘Experts’ are people who are familiar with the context of the proposal (The Interorganizational Committee on Principles and Guidelines for Social Impact Assessment, 2003), although may not be part of the community in which the proposal is intended to be implemented. As stated by Vanclay (2002), there are often differences between the opinions of experts regarding likely social impacts and desirability of alternatives, from those of the community. Finsterbusch (1995) suggests several ways in which the contributions of experts can be maximised. These include using several external expert sources with different perspectives and using these experts to provide information, assist with research design and interpret the findings of the SIA.

2.6.3 Errors

As for all methods of data collection, there is the potential for the use of local knowledge and expert opinion to introduce errors in the data. Most significant is that these sources are both

subjective, which, while consistent with the participatory approach, means that the results of the SIA may be influenced by the groups or individuals supplying the data. As mentioned above, local knowledge may be inaccurate if sources are not adequately informed on the proposal or context, or if the views obtained are not representative. The use of translations can also introduce error (Finsterbusch et al., 1990). Regardless of the sources of data however, SIA is inevitably based on judgements regarding whether the benefits outweigh negative outcomes (Finsterbusch et al., 1983).

2.7 Comparison of Methodologies

Methodologies for conducting SIAs have been published since the 1970s, in response to the requirements of the NEP Act. A review of 17 methodologies was conducted for this dissertation, which revealed a number of similarities and differences between the methodologies according to their source. The main sources of the reviewed methodologies were academics, governments and international organisations such as the United Nations and World Bank. A summary of the steps contained within each of the methodologies included in this review is given in **Appendix 1**.

A methodology is comprised of a sequence of steps which are conducted to complete the SIA. In a very simple methodology, Dietz (1987) included just three steps, identification, analysis and evaluation. While almost all other methodologies are made up of more steps, these three are useful to consider as phases in the assessment which contain varying numbers of steps in different sources. The number of steps within each phase of the methodology provides an indication of the focus of the source. In a review of 74 EISs issued by three federal agencies (Army Corps of Engineers, US Forest Service and Federal Highway Administration) Denq and Altenhofel (1997) found that the agency conducting the SIA also influenced the variables focussed on. Similarities are apparent in the methodologies developed by academics, in contrast to those developed by international organisations and governments. Generally however, SIAs tend to be Western biased and focus on negative impacts and empirical measures such as population (van Schooten et al., 2003). Denq and Altenhofel's review concluded that all three agencies tended to focus on financial and economic impacts of their actions.

The methodologies published by researchers and academics contain a number of common elements such as scoping, profiling, formulation of alternatives, projection, evaluation, mitigation and monitoring (Barrow, 2000, Becker and Vanclay, 2003, Finsterbusch et al., 1990, Finsterbusch et al., 1983). Finsterbusch et al. (1983) include problem identification as an individual step, which has been replicated in more recent methods published by the European

Commission (2008) and World Bank (2003). This has the benefit of identifying the problem early in the SIA process (subsequent only to scoping) which emphasises the need understand the problem exactly, and helps establish policy objectives which determine the focus of the SIA. Similarly, several sources have defined impact assessment as a separate step to evaluation (Barrow, 2000, Finsterbusch et al., 1983, Wildman and Baker, 1985). This allows the magnitude and effect of impacts to be identified individually and objectively (The Interorganizational Committee on Guideline and Principles for Social Impact Assessment, 1994), prior to considering the net effects of the combined impacts.

The SIA methodologies adopted by organisations and government bodies contain the steps included in those published by academics, however, also incorporate several additional steps in the analysis phase of the methodology. These are: developing a public involvement plan, estimating indirect or cumulative impacts and developing changes to the proposed alternatives. First, the development of a public involvement plan is more relevant to organisations as they are likely to have a more prominent public role, and therefore are expected to engage with the community to a greater degree than a single SIA practitioner. Secondly, identifying indirect and cumulative impacts in addition to direct impacts increases the scope of the assessment, resulting in a more thorough SIA. Finally, developing changes to the proposed alternatives provides an explicit opportunity for consideration of how negative impacts can be minimised. The inclusion of these extra steps implies that organisations place more emphasis on identifying impacts and developing alternatives than academics. This may enhance the benefits of the SIA process to the community by directing the focus of the assessment towards greater consultation with and consideration of the community, and possible changes to the proposal.

Whilst acknowledging that supplementary steps may be added, the NSW Department of Planning (2005) has excluded formulating alternatives from its six core generic steps for the SIA process. This may be due to the targeting of the guidebook towards regional and urban planners. In this context, SIA is often included as part of a broader Environmental Impact Assessment (Fenton, 2005) of either a final proposal (in which case alternatives will not be considered), or as part of an iterative planning process. In the latter case, it is likely that several alternative proposals will already be under consideration as part of the standard design process, prior to selection of a preferred option for formal assessment, and therefore developing alternatives would not be required as part of the SIA.

The methodology outlined by the World Bank (2003) contains a number of unique steps. The first of these is understanding transmission channels, or social change processes. As discussed

previously, it has been recently recognised that it is important to distinguish these from social impacts. The World Bank (2003), includes this step to ensure that the assumptions regarding the transfer of impacts are identified early in the SIA and are therefore able to be tested by subsequent economic or social analysis. The methodology also involves assessing institutions, including the group implementing the proposal and any other relevant organisations, and profiling market structure (The World Bank, 2003). The World Bank (2003) states that, where proposals depend on organisations for their implementation, the incentives, performance and capacity of the organisation(s) is critical to its potential impact. Both of these steps increase the depth of the data collected and, when combined with the gathering of baseline data and identification of stakeholders, result in a clear understanding of the structure of the system in which the project is proposed.

The World Bank (2003) also includes contemplating enhancement and compensation measures in their SIA methodology. Though not referred to as enhancement, the concept of developing alternative options which maximise benefits and minimise the extent of adverse impacts is present in the methodologies published by other organisations (Centre for Good Governance, 2006, The Interorganizational Committee on Guideline and Principles for Social Impact Assessment, 1994, Shademani and von Schirnding, 2002, The World Bank, 2003, United Nations Environment Programme, 2002). The focus of the World Bank is towards poverty alleviation and sustained development (The World Bank Group, 2010a), despite the potential for some developments to come at a social cost. Both the World Bank and the Inter-American Development Bank have been criticised for the “*negative environmental and social impacts of some of their projects*” (Finsterbusch, 1995, p240). As such, it is unsurprising that attempting to mitigate negative impacts by considering compensation has been included in their SIA methodology.

Finally, assessing risk is another step which has been incorporated into the World Bank's SIA methodology. Although not operating for profit, The World Bank requires repayment of the low or no-interest loans provided to countries (The World Bank Group, 2010b) and therefore assesses the financial risk of the projects funded by the organisation. As acknowledged by Finsterbusch (1995), it is understandable that, as it is a bank, economic factors are emphasised in project design. This step also considers the assumptions underlying the project and assesses the various sources of risk to the success of the project (The World Bank, 2003).

Kurt Finsterbusch is a sociologist and SIA practitioner who has published three methodologies identified within this literature review. It is interesting to note that his earlier publications (1983, 1990), developed with fellow academics, contain methodologies similar to those of other

academics, while a more recent article (1995) contains a methodology more like those published by governments/ organisations. Although not stated explicitly, this may indicate an acknowledgement of the benefits of the more extensive list of steps. This change has, however, not been followed by other academics such as Barrow (2000) and Becker and Vanclay (2003), who have subsequently published ‘academic style’ methodologies.

2.8 Methodology Evaluation

As early as the 1980s, it was reported that the lack of evaluation of methodologies has hindered the development of SIA (Carley, 1983). Few methodologies had been tested by ex-post analysis to check whether what was predicted was what actually happened (Carley, 1983). In the last 25 years however, little progress seems to have been made in this area. In his review in 1999, Macfarlane found that the lack of methodological evaluation has resulted in an inability to assess “*how effectively they perform, or how appropriate they are for the intended application*” (p78). Furthermore, the selection of an inappropriate methodological approach to SIA results in a “*lack of relevant and accurate information on which to base project decision-making*” (Macfarlane, 1999, p57).

Burdge and Vanclay (2004) suggest that the limited literature on completed SIAs is due to practitioners not having enough time to publish reports, and even when they do, not including enough detail to enable evaluation of the methodology used and the validity of their claims. There are currently no domestic (UK) or international standards relating to selecting an appropriate methodology (Macfarlane, 1999). Carley (1983) recommends that ex-post evaluations check the validity, structure and accuracy of the SIA in comparison with what actually occurred.

2.9 Project Background

2.9.1 Argentina: Geography and Government

Argentina has a population of approximately 40 million and covers an area of over 2.7 million square kilometres, split into 23 provinces (Europa World online, 2010), as shown in **Figure 1**. The federal capital, the Autonomous City of Buenos Aires (Buenos Aires), is located within the province of Buenos Aires (Edwards, 2008). The province has a population of 15 million, while the Buenos Aires has a population of 3 million (Europa World online, 2010).

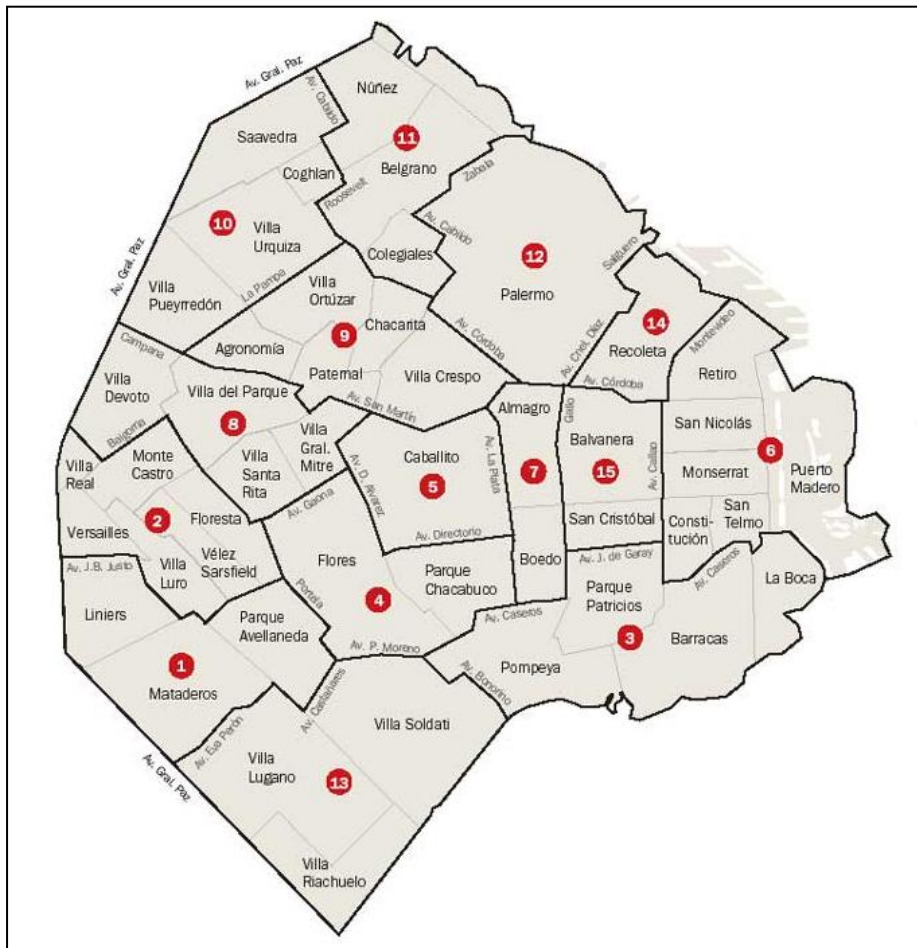
Figure 1 Provinces of Argentina



Source: (Edwards, 2008)

As illustrated in **Figure 2**, the Autonomous City is divided into 48 districts (*barrios*) which are grouped into 15 communes (*comuna*).

Figure 2 Barrios and Comuna of Buenos Aires



Source: (Clarín, 2005)

Argentina is a federal republic, governed by a President who is elected every four years, with the possibility of one re-election (Edwards, 2008, Negretto, 1998). Argentina's political and economic conditions have historically been unstable (Edwards, 2008). In December 2001, under pressure as a result of the deteriorating economy, then President Fernando de la Rúa resigned (Edwards, 2008). He was succeeded by four acting Presidents before the election of Néstor Kirchner in May 2003 (Edwards, 2008). Since 2008, the presidency has been held by his wife, Cristina Fernández de Kirchner (Edwards, 2008).

Each of the provinces has its own local government and constitution (Burton, 2005). Since 1994, when a constitutional amendment made Buenos Aires an autonomous city, the city has been governed by a mayor (previously called chief of government) who is elected by the people for a 4 year term (Negretto, 1998). The current mayor is Mauricio Macri who came into office in December 2007. During his election campaign, Macri called *cartoneros* criminals and promised that he would remove them from the streets and imprison them (Bijlsma and Hordijk, 2009, Macri, cited in Chronopoulos, 2006).

2.9.2 Description of Organisations

2.9.2.1 Cooperatives

As previously mentioned, some *cartoneros* have arranged themselves into cooperatives (Baillie et al., 2010b, Bijlsma and Hordijk, 2009). The Inter-American Development Bank (Inter-American Development Bank, 2003) states that “*the only sustainable system for collecting recycling materials that does not require government subsidies is the system of classifiers, organized into cooperatives*”. Despite the government historically opposing the presence of *cartoneros*, having cooperatives engaged in recycling actually results in economic benefits such as reducing the cost of importing raw materials, collection, transport and disposal equipment, and personnel and facilities (Medina, 2000). WfL has made contact with a number of cooperatives, which are described in **Section 4.1.2.1**.

2.9.2.2 Green Points

As a result of partnerships between the government and trucking companies, six Green Points (*centro verde*) were constructed (Baillie et al., 2010a). Each of the five private and the one government company were allocated a Green Point, to which they would take sorted waste which would then be separated, processed and sold by a cooperative (Baillie et al., 2010b). Currently, only two Green Points are running successfully and the idea has been subject to criticism due to the weakness of the official recycling system (Baillie et al., 2010a).

2.9.2.3 Empresas Recuperadas por ses Trabajadores (ERTs)

ERTs or worker-recuperated enterprises are factories which , following closure by the management, have been re-established by former workers (Baillie et al., 2010a). WfL has been in contact with two ERTs in relation to the manufacture of the hot press for the cooperatives.

2.9.2.4 Social Factory

A social factory is similar to a cooperative, however it is run more like a business. Instead of being jointly-owned by all members, a social factory is run by a named manager.

2.9.2.5 Movimiento de Trabajadores Excluidos (MTE)

Movimiento de Trabajadores Excluidos (MTE), literally the Excluded Workers Movement, was created in 2002 to represent the *cartoneros* in Buenos Aires (Bijlsma and Hordijk, 2009). MTE was founded by Juan Grabois and consists of six cooperatives, including El Alamo and El Ceibo (El Ceibo, 2010). Among its objectives are to maintain autonomy, get *cartoneros* recognised as workers and improve working conditions (Diaz, 2009).

2.9.3 Cartoneros in Buenos Aires

The activity of waste picking has been used by the very poor in Buenos Aires as a method of generating income since the 1990s (Bijlsma and Hordijk, 2009). During the presidency of Carlos Menem (1989-1999), the implementation of neoliberal policies such as the rapid privatisation of many state companies resulted in unemployment, with public workers particularly affected (Chronopoulos, 2006). In addition, poor families from rural areas moved to the outskirts of the city in an effort to move out of poverty. At the end of 2001 and throughout 2002, Argentina suffered a financial crisis which resulted in record unemployment and poverty rates (Galasso and Ravallion, 2004). The number of *cartoneros* has diminished since the peak of the economic crisis, however estimates of their current number vary considerably (Baillie and Feinblatt, 2010a). As a result, the number of *cartoneros* in Buenos Aires soared to up to 100,000 people (Baillie and Feinblatt, 2010a). Estimates range from 6,000-20,000 (Schamber and Suarez, cited in Baillie et al., 2010b) to more than 20,000 (Pan American Health Organisation, 2005). The accuracy of the official estimate is questionable as it does not include children and may include slum dwellers who register as *cartoneros* even though they are not (Bijlsma and Hordijk, 2009). As will be discussed further in **Section 2.9.7.2**, *cartoneros* are now required to be registered with the government, and as of August 2007, 15,526 *cartoneros* were formally registered (Bijlsma and Hordijk, 2009). Of the *cartoneros* who took part in a study conducted by Bijlsma and Hordijk (2009), only 55% were registered, indicating that actual numbers could be up to 30,000.

Figures presented by The World Bank (2007), state that in 2005, over 50% of workers in Argentina were in the informal sector. It would be impossible for all of the current *cartoneros* to be employed within the formal workforce as part of a government system (Baillie and Feinblatt, 2010a). For example, the government program to establish cooperative-run Green Points could only support between 300 and 400 *cartoneros* (Baillie et al., 2010a), a small fraction of any estimate of actual numbers.

Chronopoulos (2006), states that the existence of *cartoneros* in Buenos Aires depends on a number of elements, namely:

1. A significant proportion of people forced to work in the informal sector due to a formal labour market which is not large enough to support the entire population;
2. A sizeable middle and upper class who generate waste but do not engage in collecting and selling recyclables;
3. Agents who buy and sell the recyclable materials;
4. A degree of tolerance of the *cartoneros* by the population; and

5. A municipal government willing to accommodate *cartoneros*.

2.9.4 Source of Materials

In Argentina, there has traditionally been no source separation in the waste collection system (Lindhqvist et al., 2008). Residents dispose of their comingled recyclables and garbage in bags which are left on the street for collection (Baillie et al., 2010b). The bags are collected by one of six trucking companies (5 private, one public) that are each assigned a different district, and taken, either via a holding point or directly, to landfill (Baillie and Feinblatt, 2010b). The city has only one remaining landfill, Norte III, which is operated by Coordinación Ecológica Area Metropolitana Sociedad del Estado (CEAMSE), a “*municipal and regional government amalgam with private affiliations*” (Baillie et al., 2010b, p49). CEAMSE are paid on the basis of the weight of waste received and therefore have little incentive to reduce the quantity of waste sent to landfill (Baillie et al., 2010b).

Cartoneros are responsible for recovering 90% of what gets recycled in Buenos Aires (Baillie et al., 2010b), making them far more effective than official programs, which recover only 1-2% (Baillie et al., 2010b). In most cases, the material is sorted and sold to middlemen or agents, however some more organised cooperatives sell directly to industry (Baillie et al., 2010b). The question of who owns the waste is a recurring issue and has been the source of tension between various stakeholders. Once put out in the street, waste is no longer owned by the residents and trucking companies believe that they own the waste (Baillie et al., 2010b). It not owned by the *cartoneros*, who were accused of stealing the waste by Macri, however they are now legally allowed to remove recyclables as long as they are registered (Baillie et al., 2010b).

2.9.5 Income

The majority of *cartoneros* work in small family groups (hereafter referred to as individual *cartoneros*). Their average income has been reported as about 118 pesos per week (Bijlsma and Hordijk, 2009), or 350-600 pesos per month (Chronopoulos, 2006). The income of *cartoneros* working within cooperatives is generally greater than individuals at approximately 630 pesos per month (US\$160), however this is still less than the official 2007 government poverty line 964 pesos per month (US\$245) (Baillie et al., 2010b) (Medina, 2000). For all *cartoneros*, their income is highly dependent on prices of materials, which is largely determined by external factors such as the demand in countries like China. The global financial crisis in 2008 lead to a sharp drop in the price of recyclables (Baillie et al., 2010b) which affected the income of the *cartoneros*. Prior to this, a recycling vendor in a low-income neighbourhood paid 7 centavos/ kg (US 1.8c, OANDA

Corporation, 2010) for newspaper, 40 centavos/ kg (US 10c) for high-quality white office paper, 3.5 pesos/ kg (US 89c) for Al and 8.5 pesos/ kg (US \$2) for copper (Chronopoulos, 2006).

The higher prices received for metals, combined with a fast growing demand for electrical products in Argentina may have future implications for the activities of *cartoneros*. A report commissioned by Greenpeace into the management of waste electrical and electronic equipment ('e-waste') in Argentina, found that *cartoneros* are already engaging in some recycling of e-waste involving hazardous processes such as burning cables and acid baths (Lindhqvist et al., 2008). Although e-waste recycling in Argentina is yet to reach the scale of activities in India and China, the more lucrative nature of e-waste recycling may attract *cartoneros* away from the waste streams they currently process in an effort to increase their income (Lindhqvist et al., 2008). The typical hazardous, primitive processes used to process e-waste, would then not only significantly increase the health risks to *cartoneros* whilst undertaking their work but would also be damaging to the environment (Lindhqvist et al., 2008).

2.9.6 Position within Society

Since being forced into working in the streets to provide an income, some *cartoneros* have embraced the idea of being independent or 'sin patron' (without a boss) and enjoy the flexible working hours (Medina, 2000, Baillie and Feinblatt, 2010a). Further to this, some *cartoneros* saw the formation of cooperatives (cooperativism) as an infringement upon their independence, whilst others welcomed the mutual dependency/ responsibility (Baillie and Feinblatt, 2010a). The support of cooperativism is largely due, not to any strong political views, but to the belief that no government will help them and therefore they must help each other to survive (Baillie and Feinblatt, 2010a).

During the financial crisis, the *cartoneros* were generally viewed with empathy by residents (Chronopoulos, 2006), which was likely caused by a feeling of insecurity with their own financial status and a recognition of "*how easily they could find themselves forced into the same unstable situation*" (Baillie et al., 2010a, p65). At this time, the presence of *cartoneros* was also accepted by the government and, as a result, laws and policies were developed to address issues regarding the *cartoneros* (Baillie et al., 2010a, Chronopoulos, 2006). These are described in **Section 2.9.7.**

A study conducted by Bijlsma and Hordijk (2009, p6) into forms of violence experienced by *cartoneros* in Buenos Aires found that "*more than 90% of the surveyed cartoneros indicated that they were affected by at least one form of violence*". The study categorised violence as either political, institutional, economic or social. The most common examples of economic violence were from

the agents, who interfered with the weight of the material or paid too little. Political and institutional violence was reported in the form of political discrimination from the state, politicians and governments and from the police, while social violence was mostly non-political discrimination such as being looked at with a 'dirty face'. The study concluded that the political and social exclusion that *cartoneros* suffer from is more important to them than the economic violence (Bijlsma and Hordijk, 2009).

2.9.7 Legislation

For the government, finding a system for maximising recycling whilst still maintaining work for *cartoneros*, trucking companies and landfill operators is a complex problem. A number of laws have been introduced in an effort to reduce waste to landfill whilst also supporting *cartoneros*, however, whether these provide any actual benefits to the *cartoneros* is debateable.

2.9.7.1 Zero Garbage Law

In late 2005, the *Zero Garbage Law* (Basura Cero) came into effect, aiming to reduce waste sent to landfill or incineration in order to reduce soil, air and water pollution (Baillie and Feinblatt, 2010a). The law identified targets to reduce waste to landfill from 2003 levels by 50% by 2012 and 75% by 2017, which will require a reduction in the quantity of recyclables disposed of to landfill (Baillie and Feinblatt, 2010a). Although working towards environmentally beneficial outcomes, achieving these targets may have serious implications for the *cartoneros*. As mentioned previously, a government scheme will not be able to provide professional work for all *cartoneros*. This has resulted in tensions between *cartonero* groups and Greenpeace, who were involved in drafting the legislation, and had previously been a strong and dependable ally of the *cartoneros*.

2.9.7.2 Dirección General de Políticas de Reciclado Urbano (DGPRU)

In 2006, the former Buenos Aires government established the DGPRU (Directorate General of Urban Recycling Policy), an office to manage urban recycling policy, as part of a larger scheme on municipal solid waste in Buenos Aires City (Baillie and Feinblatt, 2010a). One of its mandates was to provide credentials, health and safety equipment such as gloves, tunics and vaccinations and ban children under 15 from collecting waste (Baillie and Feinblatt, 2010a). Under the DGPRU, the activity of collecting waste was legalised and termed 'informal work' and *cartoneros* were required to register (Baillie et al., 2010b). As mentioned previously, as of July 2007, over 15,500 *cartoneros* had registered (Baillie and Feinblatt, 2010a, Bijlsma and Hordijk, 2009).

2.10 Waste for Life

WfL is a loosely joined network of scientists, engineers, educators, designers, architects, cooperatives, artists and students from different disciplines and countries (Baillie et al., 2010b). WfL is currently working in Maseru, Lesotho in southern Africa and Buenos Aires, Argentina in South America to develop low-cost technologies that add value to waste materials and provide a source of increased income for some of the poorest members of society (Baillie et al., 2010b). For this purpose, WfL have designed a hot press that can be manufactured relatively cheaply (approximately US\$1,000), yet still performs comparably to expensive, commercially available machines. The hot-press is designed to turn locally available waste plastic and fibre into a composite material.

The aims of WfL's work in Buenos Aires are:

1. To assist *cartonero* cooperatives to increase their income; and
2. To make them more autonomous and self-sufficient.

The hot-press will be used to process plastic bags, which are of very low value and currently unprofitable to the *cartoneros*, and low-grade paper to produce a material that can be used to make saleable products. There are a number of different product options available to the cooperatives, including building materials for local shanty towns, furniture and items designed by students at the Rhode Island School of Design such as wallets, bags and boots. The choice of product(s) to be manufactured by a cooperative would depend on the individual circumstances of the group, such as the availability of particular waste materials, human resources and potential markets for the product(s). In cities such as Mexico City, Lagos (Nigeria) and Istanbul, investment in expensive waste management infrastructure (incinerators and composters for example) has been unsuccessful (Medina, 2000). This highlights the importance of ensuring infrastructure or equipment is applicable to the local situation and preferably locally manufactured.

2.10.1 Intended Benefits

The WfL proposal is intended to result in a number of social benefits, in particular for the cooperatives involved, as well as environmental benefits. It is interesting to note the similarities between WfL's objectives and a description of SIA given by Vanclay (2003a, p7), in which he states that "*SIA encompasses empowerment of local people, enhancement of the position of women, minority groups and other disadvantaged members of society, development of capacity building, alleviation of all forms of dependency, increase in equity and a focus on poverty reduction*".

The use of the hot-press is intended to supplement, not replace the income earned from current collection and sorting activities. Diversification has been found to result in increased earnings for successful cooperatives in Mexico and Columbia (Medina, 2000). Offering an opportunity to increase their income through the processing of currently unprofitable materials may help the cooperatives avoid the lure of more dangerous e-waste recycling processes. In turning low-grade materials into useable products, the processing of the waste materials is not only recycling but upcycling. Upcycling is defined as "*the practice of taking something that is disposable and transforming it into something of greater use and value*" (McDonough and Braungart, 2002, p42). This has two environmental benefits; diverting materials from landfill, whilst also reducing the demand for virgin materials, thereby saving energy and water (Medina, 2000).

Another potential social benefit from the project is an improved relationship between the cooperatives and the local community. For example, El Ceibo is known for its successful collaboration with residents of the district of Palermo, who sort their own waste and give the recyclables to the cooperative (Baillie et al., 2010b). The Londrina cooperative in Brazil collects door-to-door which builds a bond between waste pickers and the community and reinforces their role as professionals (AVINA Foundation, 2008). It was found that this relationship with the community resulted in a lower organic fraction within the waste and quality of material improved (AVINA Foundation, 2008). The findings of Bijlsma and Hordijk (2009) mentioned previously, suggest that any social benefits gained from the project would be highly valued by the *cartoneros*.

3 Approach and Methodology

As much as possible in the description of the approach, steps and methods used to conduct the SIA, the reasons behind their selection have been discussed. This allows these justifications to be used by future practitioners of SIAs to improve their methodologies. In their summary report on Social Impact Assessment for the European Commission, Nicaise and Holman (2008) identify transparency of procedures as a feature of a good-quality SIA. Providing a detailed description of and reasons behind the steps and methods used also contributed to the appraisal of the methodology.

3.1 Approach

The methodological approach taken for this SIA was predominantly participatory. This was strongly influenced by the characteristics of the available data, which were mostly consistent those shown in **Table 2** under the participatory approach. Both the existing data, and that which was able to be obtained with the available resources, were entirely qualitative. The data was analysed within an idiographic scope, which considers the specific political and cultural setting, rather than assuming that trends will remain constant. The data was obtained, however, from sources classified as both participatory (community) and technocratic (expert).

The participatory approach emphasises using data that incorporates the views of those stakeholders who are most affected in the SIA. In this case, the most affected stakeholders are also the intended beneficiaries of the project and therefore their opinions are critical to the reliability of the results of the SIA and to the success of the project. The potential issues associated with using opinion as a data source were minimised by noting each source and their position within the system, and incorporating their potential biases into the analysis of the data.

3.2 Methodology Development

Following the review of the SIA methodologies in the literature, the steps identified in each source were compiled to form a comprehensive list of 21 possible steps which may be included as part of an SIA. Both Wolf (1983) and Finsterbusch et al (1990) note that no methodology is applicable to every project, and that it is best to adapt a general framework to assess individual projects. Carley (1983) concurs that a general SIA methodology may be tailored to a particular application. Therefore, the relevance of each of these steps to the SIA of WfL was considered, and ten steps were omitted from the complete list. The remaining steps have been adopted as the methodology for the SIA conducted for this project. **Table 4** shows the complete list of

steps, including a brief description of the tasks required to complete them. The highlighted steps are those which were included in this assessment.

Table 4 Summary of steps in Social Impact Assessment methodology

No.	Step	Description
1	Scoping	Identify potentially impacted people; identify limits; decide on methodology, variables and data sources (Barrow, 2000, Finsterbusch et al., 1983, Wolf, 1983)
2	Problem Identification	Perform needs assessment (Finsterbusch et al., 1983)
3	Establish policy objectives	Develop specific, measureable, achievable, realistic and time-dependent objectives (Nicaise and Holman, 2008)
4	Public involvement plan	Ensure all interested and affected stakeholders are involved (The Interorganizational Committee on Guideline and Principles for Social Impact Assessment, 1994)
5	Profiling	Determine who is likely to be impacted (stakeholders), establish current social profile and baseline data (Barrow, 2000)
6	Understand transmission channels	Delineate channels by which project is expected to impact stakeholders (The World Bank, 2003)
7	Assess institutions	Analysis of market structure and implementing agencies. Analysis of other relevant governments and organisations (The World Bank, 2003)
8	Identification of alternatives	Develop reasonable alternatives to proposal (Barrow, 2000)
9	Projection of estimated impacts	Project what may happen, who is affected. Identify cause effect linkages and feedbacks (Barrow, 2000)
10	Estimate indirect and cumulative impacts	Predict indirect and cumulative impacts of direct impacts (The Interorganizational Committee on Guideline and Principles for Social Impact Assessment, 1994)
11	Changes to alternatives	Recommend changed alternatives to proposal and estimate the resulting impacts (The Interorganizational Committee on Guideline and Principles for Social Impact Assessment, 1994)
12	Impact Assessment	Determine magnitude and effect of impacts; determine potential for avoidance/ mitigation (Barrow, 2000) Determine significance of identified impacts (The Interorganizational Committee on Guideline and Principles for Social Impact Assessment, 1994)
13	Contemplate enhancement and compensation	Consider direct compensatory measures where adverse impacts are unavoidable (The World Bank, 2003)
14	Assess risks	Identify what could go wrong; assess assumptions and identify risks (The World Bank, 2003)
15	Evaluation	Determine who benefits and who loses; evaluate whether overall impact is acceptable (Barrow, 2000) Select an option (Wildman and Baker, 1985)
16	Mitigation	Identify measures to counter unwanted impacts (Barrow, 2000)
17	Implementation of project	Implement selected option (Wildman and Baker, 1985)

No.	Step	Description
18	Monitoring	Measure actual impacts; feedback into policy; develop ongoing monitoring plan (Barrow, 2000)
19	Ex-post audit	Retrospective audit of SIA process (Barrow, 2000)
20	Report findings	Present findings to implementing organisation and stakeholders
21	Management	Devise management plan; adjust planning objectives, operating procedures and design specifications (Finsterbusch et al., 1983)

The methodology used for this SIA (ie the steps selected) was developed with reference to guidelines provided by Carley (1983). The guidelines contain a list of 15 elements which should be considered in the development of SIA methodology. Although published almost 30 years ago, these guidelines are considered relevant, particularly given the lack of development of SIA methodologies during this time. The elements to be considered include:

- Significance of impacts;
- Mitigation measures;
- Data requirements;
- Quantification and qualification;
- Disaggregation of data;
- Resource capability;
- Probability of impact occurrence;
- Causal understanding;
- Value assumptions;
- Hierarchical structure;
- Communicability;
- Sensitivity analysis;
- Robustness measure;
- Public debate;
- Validity.

To maximise the effectiveness of the methodology, as many of these elements were included as possible. Some elements, such as significance of impacts and mitigation measures, have been included as individual steps (impact assessment and mitigation respectively). The remaining elements have either been incorporated into the tasks required for a particular step, or guided the structure of the overall methodology.

The consideration of data requirements involves what data are realistically available, such that the methodology is not designed around unavailable data, or that which is too difficult to collect. The selection of data used to conduct the assessment is discussed further in **Section 3.5**. Carley (1983) recommends that the methodology avoid bias towards quantifiable data, and that quantified data be disaggregated. In this assessment, no quantified data was used, partially due to availability, but also to focus the assessment on important, unquantifiable variables. Considering resource capability involves ensuring that the methodology is able to be completed with the available resources, whilst not being overly simplistic or complicated. The time and resource restrictions on this project have been taken into account when designing the

methodology, particularly in relation to data collection, however the inclusion of 11 of the 21 steps indicated that the methodology has not been oversimplified, given that most of those reviewed contain between 6 and 10 steps.

The probability of impact occurrence, causal understanding and value assumptions have all been incorporated into one or more of the steps of the methodology. Probability is determined during impact assessment. An understanding of causality is encouraged in several steps, such as profiling, and understanding transmission channels. The assumptions made are identified in impact assessment.

The last four of the elements proposed by Carley (1983) have not been incorporated into the methodology developed for this assessment. Despite being recommended where there is a large amount of uncertainty in the projections, a formal sensitivity analysis has not been included in this methodology. This is primarily because variables haven't been used to conduct the assessment. To address this, the evaluation of impacts includes consideration of factors which are likely to influence the significance of each impact. Robustness measures should be considered where outcomes have been ranked, which has not been conducted for this assessment as only one proposal was assessed. Carley recommends that the SIA should be designed, written and presented to stimulate public debate. In this case, however, language barriers limit the number of people who will be able to read the SIA report. This is, however, not expected to limit awareness of the project and its potential implications as this is already under discussion and the results of the SIA will be communicated to interested parties through WfL. Unfortunately, time restrictions on this project do not allow for the validity of the projections to be assessed. An ex-post analysis of the outcomes of this study is recommended.

3.3 Description of Steps

3.3.1 Scoping

In the majority of methodologies from academic sources, scoping is the first step of the SIA. The methodologies published by governments and organisations, however, generally place scoping after a number of other steps. Depending on the position of the step within the methodology, the description of the tasks involved differs slightly. Where it is given as the first step, scoping involves identifying:

- Limits (funding, time, expertise) (Wolf, 1983, Barrow, 2000);
- Methodology (Wolf, 1983, Barrow, 2000);
- Data sources (Barrow, 2000);

- Variables (Barrow, 2000, Becker and Vanclay, 2003); and
- Potentially impacted stakeholders (Barrow, 2000, Becker and Vanclay, 2003).

In contrast, the methodologies that place scoping further down in the sequence of steps only include identifying and prioritising likely impacts (Centre for Good Governance, 2006, United Nations Environment Programme, 2002, Shademani and von Schirnding, 2002), with the exception of the Interorganizational Committee (1994) which defines scoping as selecting SIA variables. For this assessment, scoping was conducted as the initial step, and therefore the tasks conducted were based on those listed above. Identification of potentially impacted stakeholders was omitted, however, as this was conducted more thoroughly in the stakeholder identification required for profiling.

The selection of SIA variables were also excluded from this SIA. As described in **Section 2.1**, variables are used to monitor social impacts. Due to the qualitative nature of the majority of the data, monitoring changes in any variables identified would be challenging and require a significant investment of resources which are currently unavailable. Whilst being easier to monitor, quantitative economic variables such as income have not been included as it is unknown exactly which are going to be involved and would therefore require a large amount of data from many cooperatives to be collected, which is not feasible. WfL will, however, continue to be heavily involved during the implementation of the project and ensure that it is sustainable. An awareness of changes to the relevant SIA variables, (such as employment/ income characteristics and perceptions of risk, health and safety) is expected to result from this involvement, despite not being explicitly monitored. Finally, the literature review identified several SIA practitioners who advise against using list of variables.

3.3.1.1 Stakeholder Identification

Stakeholders, or “*actors that can influence or be affected by a certain problem or action*”, may include individuals, groups, communities and sectors of society (Burdge, 2004, Chevalier and Buckles, 2008). There are a number of methods used to identify stakeholders including identification by experts, self-selection, other stakeholders, using records and population data, using oral or written accounts of major events or using a checklist (Baillie et al., 2010b).

Stakeholder identification was conducted by Baillie et al. (2010b), by creating a rainbow diagram. This identified a small group of key stakeholders and indicates which of these are most and least affected by a proposal, and those with most and least influence (Baillie et al., 2010b). Most stakeholders were identified simply from a review of the rainbow diagram. To ensure that the list of potentially affected stakeholders was as comprehensive as possible

however, stakeholder identification was also incorporated into the questionnaire, and conducted by the SIA practitioner during the review of video data. This resulted in a number of additional stakeholders being identified.

3.3.2 Problem Identification

Two of the methodologies reviewed include problem identification as an explicit step of the SIA (Nicaise and Holman, 2008, Wolf, 1983). Wolf (1983) includes formulating policy goals, identifying stakeholders and potential concerns, performing a needs assessment and determining criteria for evaluating impacts as tasks to be conducted as part of problem identification. Two of these tasks, identifying stakeholders and potential impacts and evaluation criteria, are included in other methodologies under scoping and have therefore been excluded from this step in this SIA. Other methodologies have, however, not included formulating policy goal and performing a needs assessment and therefore for this methodology, these tasks were performed in the problem identification step.

3.3.3 Profiling

Profiling, referred to by some methodology sources as establishing a baseline condition, is conducted to obtain a thorough understanding of the context of the project. This involves establishing the current social profile, collecting baseline data including identifying current trends, and sorting potential impacts into categories (Centre for Good Governance, 2006, Barrow, 2000, Wolf, 1983). In addition, identifying data gaps should be undertaken as part of the profiling step (Barrow, 2000, The World Bank, 2003). Planning for gaps in the data is one of the principles of SIA developed by the Interorganizational Committee. It is often the case that an SIA must be conducted without all relevant and necessary data being available (The Interorganizational Committee on Principles and Guidelines for Social Impact Assessment, 2003). If possible, data should be gathered to fill these gaps, however where this is not possible, they should be declared, discussed and the implications considered when completing the assessment (Barrow, 2000).

For this SIA, all of the tasks have been completed, however sorting potential impacts into categories was conducted as part of the impact assessment step. Data gaps were identified following a brief review of the existing data, which led to the development of the questionnaire, as described further in **Section 3.5.2**.

3.3.4 Understand Transmission Channels

Due to the intention of WfL's project to result in economic impacts (generating additional income for the cooperatives), it was decided that the World Bank's groupings of transmission

channels would be used to classify the various ways in which impacts were expected to arise. In addition to the five listed by The World Bank, two more transmission channels were relevant to this assessment. First, authority (included by Kasmann, 2009), and secondly safety, which, although not part of any of the reviewed literature, was thought to be an important aspect of this project. Examples of the transmission channels used for this assessment are given in **Table 5**.

Table 5 Transmission channels

Transmission Channel	Examples
Prices	Increased/ decreased prices Changes to production, consumption and wages [#]
Assets	Tools/ equipment, skills and knowledge, financial, social, management of resources
Access	Access to markets, microcredit, information services
Employment	Create opportunities for self-employment
Transfers and taxes	Provision of subsidies for credit, creation of taxes
Authority	Creation of cooperatives
Safety	Exposure to risk

Source: (Kasmann, 2009) except [#] from (The World Bank, 2003)

3.3.5 Projection of Impacts

The projection of impacts uses the information gathered from previous steps to predict what will happen and who will be affected (Barrow, 2000). Direct social impacts are defined as those that result “*directly from the social change processes that are invoked by a project*” and may be either intended or unintended (van Schooten et al., 2003, p79). The impacts identified should be those which are expected to occur as a result of the proposal being implemented and not as a result of baseline trends (Centre for Good Governance, 2006, The World Bank, 2003). Where it is unclear whether a certain impact will occur, the Interorganizational Committee (2003) states that it should not be ruled out. The probability of an impact occurring will be taken into account during impact assessment, therefore even impacts that seem highly unlikely should be included in this step.

There are a variety of different methods which may be used to predict impacts (Centre for Good Governance, 2006, Fenton, 2005). One of these is to base the predictions on expert judgement (Fenton, 2005). This method was used in this assessment through the development of the questionnaire mentioned previously. Responses to the questions were collected from stakeholders who, with one exception, had an existing knowledge of both the WfL project and the waste management and recycling system in Buenos Aires. These respondents were

therefore taken to be experts. Impacts were also predicted by the SIA practitioner following a review of the video footage used to collect data during profiling.

3.3.6 Estimate Indirect and Cumulative Impacts

The importance of including secondary and cumulative impacts as part of SIA has been reported in recent literature (Burdge and Vanclay, 2004, Sutheerawatthana and Minato, 2010). An indirect social impact is defined as “*a result of changes in the biophysical environment*” (van Schooten et al., 2003, p79), where the change (or changes) has been caused by a direct impact of an action. Cumulative impacts are those which occur over time as a result of both direct and indirect impacts. Sutheerawatthana and Minato (2010) give an example of a regional-development policy that increased the income of some families (direct impact) that resulted in their children attending school more often (indirect impact). In this scenario, a cumulative impact may be an improvement in literacy within the community.

In many cases, these impacts are no less significant than direct impacts (Sutheerawatthana and Minato, 2010), and therefore identifying and assessing these impacts is an integral part of conducting a successful SIA. They generally occur much later than direct impacts, both in time and geographic scales (Centre for Good Governance, 2006), and may cause additional stakeholders to become involved (Sutheerawatthana and Minato, 2010), thereby increasing the scope of the SIA.

3.3.7 Impact Assessment

Impact assessment involves determining the significance of impacts and the potential for mitigation of negative impacts (Barrow, 2000). It is important to consider significance before evaluating the overall impact of the proposal as treating all impacts as equally significant and weighing up the number of positive versus negative impacts is likely to give a misleading outcome. There are numerous criteria which may be used to assign the significance of an impact. Those contained within three recent publications are shown in **Table 6**. Rowan (2009) considers each criteria as either influencing the magnitude or sensitivity, which are then combined to assign significance.

Table 6 Criteria for assessing impact significance

The Interorganizational Committee on Guideline and Principles for Social Impact Assessment (2003)	Queensland Department of Planning and Infrastructure (2010)	Rowan (2009)	
Probability of event occurring	Probability	Magnitude	Probability
Number of people and/ or indigenous populations that will be affected	The stakeholders involved		Location or spatial extent
Duration of impact	Phase of the project at which the impact is likely to occur		Permanency
Value of benefits and/ or costs to impacted groups	Consequence		Numerical extent
Extent to which identified social impacts are reversible or can be mitigated	Proposed mitigation and/ or management strategies		Wellbeing
Likelihood that an identified impact will lead to secondary or cumulative impacts	Type of impact (positive or negative)	Sensitivity	Vulnerability
Relevance for present and future policy decisions	Responsible parties		Capacity to absorb changes
Uncertainty over possible effects	Proposed timeframe		
Presence or absence of controversy over the issue	Key performance indicators		

To limit the complexity of determining significance, only the most important and relevant criteria were used. These are:

- Probability;
- Extent;
- Duration;
- Vulnerability; and
- Potential for mitigation.

Probability and the potential for mitigation were included as criteria affecting significance of impacts as they were listed by all three sources. Probability of impact occurrence is also listed by Carley (1983) as a factor that should be considered in an SIA. The extent, or number of people affected, and duration or permanency are included by both the Interorganizational Committee and Rowan and are also included for this SIA. Although vulnerability is only included by Rowan, this was considered important for this SIA because one of the problems is that the cooperatives have little influence. The stakeholder analysis conducted by Baillie, Feinblatt and Kabo (2010a) identified the influence of each stakeholder, which has been used to indicate vulnerability (stakeholders with least influence are the most vulnerable).

The remaining criteria were excluded for a variety of reasons. Due to the time and resource restrictions on the project, data on the value of the benefits and costs was not able to be calculated. The likelihood of an impact causing indirect and cumulative impacts was excluded as this information was incorporated into the probability of indirect and cumulative impacts occurring. As the vast majority of impacts were expected to affect stakeholders within Buenos Aires, the location and spatial extent of each impact was not determined. The extent of each impact was thought to be better indicated by the number of people affected. According to Rowan (2009, p188) wellbeing “*refers to a person’s financial, physical and emotional condition*”. Changes to these factors have been considered as part of the classification of each impact as positive or negative, thus wellbeing is not a criterion used to determine significance.

Both the type of impact and stakeholders involved have been identified as part of the impact assessment process, however they have not been chosen to indicate significance. These criteria are considered necessary for evaluation, however should not influence the significance of an impact. The relevance for present and future policy decisions was not explicitly identified in the impact assessment, and therefore not included in attributing significance, however was considered as part of the evaluation process.

The phase of the project at which the impact is expected to occur was excluded due to the classification of impacts by order, which provides an indication of the timing of the impact relative to the start of the project. As there is considerable uncertainty surrounding the timing of the project, proposed timeframe was omitted as any values here were likely to be inaccurate. The responsible party was identified as part of the development of mitigation strategies, and for the majority of impact, was expected to be WfL. The uncertainty over possible effects and presence or absence of controversy over the issue were both criteria that were considered irrelevant to the significance of the impacts caused by WfL. Finally, WfL has no key performance indicators, therefore these are not applicable in this case.

Rowan (2009) provides definitions for impacts of major, moderate, minor and neutral significance, according to changes that an impact causes to wellbeing of stakeholders and the vulnerability of these stakeholders. As wellbeing was excluded from the criteria used to assess significance of impacts, these definitions have not been used to assign significance to impacts in this SIA. Due to the highly complex nature of the criteria influencing the significance of each impact, no precise definitions were used to assign significance. Instead, the criteria were considered by the practitioner, who made a case-by-case judgement on significance. The categories within each of the criteria used to assess social impacts are shown in **Table 7**.

Table 7 Impact assessment criteria

Criteria	Categories	Criteria	Categories
Influence	Least influence	Extent	Large (>3 stakeholders or many people)
	Moderate influence		Medium (2-3 stakeholders or some people)
	Most influence		Small (1 stakeholder or few people)
Vulnerability	High	Duration	Short term (<1 year)
	Medium		Medium term (1-3 years)
	Low		Long-term (>3 years)
Order	Direct	Consequence	High
	Indirect		Medium
	Cumulative		Low
	Natural Change		
Type	Positive	Potential for Mitigation	High (Strategy identified and possible)
	Negative		Medium (Strategy identified but difficult)
Probability	Almost certain		Low (No strategy identified/ possible)
	Likely		
	Possible		
	Unlikely		
	Rare		
Significance	Major		
	Moderate		
	Minor		

3.3.8 Assess Risks

Including risk assessment in the SIA is an important part of avoiding unintended consequences. There are two types of risk that need to be assessed as part of an SIA. First, the risks introduced by the implementation of the proposal should be identified. Vanclay (2002), states that these risks are also impacts, and should therefore be incorporated into the list of potential impacts evaluated. Stakeholders' perception of potential risks may be important in determining the significance of impacts (Włodarczyk and Tennyson, cited in Burdge and Vanclay, 2004). Burdge and Vanclay (2004) reiterate that public attitudes towards risk determine how people feel and act, and therefore influence potential social impacts. Secondly, the assumptions upon which the proposal is based should be identified, along with the risk that these assumptions are not accurate (The World Bank, 2003). This is conducted to predict what could go wrong to prevent success of the proposal, which allows for the mitigation of these risks to maximise the chances of success (The World Bank, 2003). Therefore, how important each assumption is to the success of the proposal should be considered as part of this assessment (The World Bank, 2003).

In this SIA, risks were identified by the practitioner during the review of video interviews by respondents to the questionnaire. The risks directly resulting from the WfL project were

incorporated into the identification and assessment of impacts. The assumptions upon which the success of the project is based are discussed in **Section 5.1.1**.

3.3.9 Evaluation

The evaluation step seeks to answer the underlying question of the SIA of “who benefits and who loses?” (Barrow, 2000, p10). In accordance with the descriptions within several methodologies (Finsterbusch et al. 1983, Barrow 2000, Fenton 2005), evaluation involved assessing the significance and desirability of the impacts identified to determine whether the overall impact is acceptable. Significance was determined during the assessment of impacts, whilst the type (positive or negative) was taken indicate the desirability of the impact.

In addition to the evaluation of potential impacts, the methodology developed for the SIA was appraised. This involved identifying what was successful, limitations and areas for improvement. This information was used to develop recommendations for SIA practitioners about future applications of this methodology.

3.3.10 Mitigation

The purpose of this step is to develop mitigation measures for any adverse impacts identified which are above an acceptable threshold (Wolf, 1983).

Considering avoidance of negative impacts should be conducted first as this is obviously the preferred option. If alternatives to the project have not been considered, the practitioner should identify modifications to the proposal which may mitigate any avoidable negative impacts (Centre for Good Governance, 2006, The World Bank, 2003). For the remaining unavoidable impacts, where possible, mitigation measures should be developed for those which are above an acceptable threshold (Wolf, 1983, Centre for Good Governance, 2006, Fenton, 2005). This threshold may be dependent on various aspects of a specific impact, such as the extent, duration and the vulnerability of the affected stakeholder. Mitigation strategies should (Department of Infrastructure and Planning, 2010):

- Be developed in collaboration with relevant parties (enables improved interaction between key stakeholders in resource communities);
- Utilise responses appropriate to the impact’s type, probability and consequence;
- Be developed in accordance with government plans, strategies or programs (ensure greater certainty of outcomes and increase awareness and collaboration between parties);
- Reflect or link to strategies already being implemented.

Within a number of methodological sources, it is suggested that compensation measures be developed for remaining unavoidable negative impacts (Centre for Good Governance, 2006, The World Bank, 2003). The World Bank (2003) states that this should be carefully considered to ensure funds are targeted effectively and so that it avoids providing an incentive for exploitative schemes. For the SIA of WfL, only the first two aspects (avoidance and mitigation), have been included as part of the mitigation plan. The reasons for omitting consideration of compensation from the SIA have been previously discussed in **Section 3.4.6**.

3.4 Omitted Steps

3.4.1 Establish Policy Objectives

The European Commission states that establishing policy objectives requires developing specific, measurable, achievable, realistic and time-dependent objectives (Nicaise and Holman, 2008). Prior to conducting this assessment, the objectives of WfL had already been clearly established. The main objectives, of helping *cartonero* cooperatives to increase their income and become more autonomous and self-sufficient, satisfy all the requirements listed above, with the exception of measurability, which applies only to the potential changes in income. It was therefore thought unnecessary for new policy objectives to be developed, or for the existing objectives to be altered.

3.4.2 Public Involvement Plan

The development of a public involvement plan is only included in the methodologies published by organisations, with the exception of Finsterbusch (1995), and in all cases is listed as the first step. The aim of this step is to ensure that all affected and interested parties are involved in the SIA process (Finsterbusch, 1995, The Interorganizational Committee on Guideline and Principles for Social Impact Assessment, 1994). By conducting this SIA using expert knowledge from members of affected and interested stakeholders, the involvement of the ‘public’ has been inherently included within the SIA and therefore a plan to achieve this was not required. In addition, the project lacked the resources required to conduct effective public consultation.

3.4.3 Assess Institutions

Assessing institutions is a step which is only included within the methodology published by the World Bank. The term institutions refers to “*markets, legal systems and the formal rules and informal behaviour of implementing agencies*” (The World Bank, 2003, p6). Changes to these institutions are often required for the successful implementation of a policy. This may influence social impacts in four ways:

- Transferring impacts to stakeholders;
- Being the object of the reform;
- Affecting the success of the policy (where it is dependent on the incentives, performance and capacity of organisations); or
- Introducing transaction costs.

The World Bank's methodology states that the step of assessing institutions should focus on analysing market structure and implementing agencies. As the products to be manufactured by the cooperatives have not yet been decided on, it is not possible to analyse the structure of the market for these products. The analysis of the 'market' for recyclables forms part of the profiling step. Analysis of the implementing agency, WfL, was not thought relevant as it is highly unlikely to affect the potential social impacts through any of the four ways listed above.

3.4.4 Formulation of Alternatives

This step involves the consideration of reasonable alternatives to the proposal, including no action (United Nations Environment Programme, 2002). Due to the length of time over which the proposal has been developed, and the consultation with stakeholders which has already taken place, the proposal being assessed in this SIA is thought to be the best of the available options, given the skill and knowledge base of WfL. Should the SIA find that the proposal is likely to result in negative impacts that outweigh the benefits, some small adjustments may be considered. However, should results indicate that the technology developed by WfL is unlikely to achieve their objectives in Buenos Aires, it would be difficult for the proposal to be changed drastically. In this event, it is more likely that WfL would simply not become involved with the cooperatives, thereby avoiding the negative impacts identified.

3.4.5 Changes to Alternatives

Due to the exclusion of the step involving the formulation of alternatives, considering changes to alternatives in response to the predicted impacts was also not included within this SIA.

3.4.6 Contemplate Enhancement and Compensation

As discussed in the literature review, this step was included only in the methodology described by the World Bank. Contemplating enhancement is analogous to considering alternatives to the proposal, which, as previously mentioned, is outside the scope of this assessment. The concept of providing compensation was discussed within the literature review, in which it concluded that this would contradict one of the aims of the project (to help the cooperatives in becoming autonomous and self-sufficient) and values of WfL.

3.4.7 Implementation, Ex-post Auditing and Management

The final three steps have not been included within this SIA due to time limitations. The proposal will only be implemented after this assessment has been completed and there are no serious negative impacts foreseen. As a result, subsequent steps including conducting a thorough ex-post audit and developing a management also have not been included within this SIA. An assessment of the SIA has been conducted as part of the second project aim, including identifying strengths and weaknesses of the methodology and data collection and analysis methods used. In addition, while a comprehensive management plan has not been developed, recommendations have been made with the aim of improving the proposal.

3.5 Data Collection

3.5.1 Video Interviews

Two members of the WfL team visited Buenos Aires for six months in 2007 and again in 2008 to 'map the territory' (Baillie et al., 2010b). During this time, interviews were conducted with key stakeholders, including nine cooperatives and one social factory (Baillie et al., 2010b). In total, 26 videos were reviewed. The stakeholder groups represented and the people interviewed are shown in **Table 8**.

The video footage was recorded in either English or Spanish, depending on the language skills of the interviewee. In some cases where translation was required, the responses had already been transcribed into English by Rhiannon Edwards, a Canadian student for WfL. Some of those which were recorded in Spanish contained English translations by translators present at the interview. The remaining Spanish videos, for which no translation was available, were translated and transcribed by Liliana Balaguera Cortes (LBC), an honours student at UWA. Where applicable, the method of translation for each of the videos is shown in **Table 8**.

Table 8 Stakeholder identification and translation method for video interviews

Stakeholder	Identification	Translation
Street <i>cartoneros</i>	Participant 1	LBC
	Participant 2	WfL
	Participant 3	LBC
	Participant 4	WfL
Cooperative A	Participant 5	WfL
Cooperative B	Participant 6	LBC
Cooperative C	Participant 7	-
Cooperative D	Participant 8	WfL
Cooperative E	Participant 9	-
	Participant 10	-

Stakeholder	Identification	Translation
Cooperative F	Participant 11	LBC
	Participant 12	LBC
Social Factory A	Participant 13	-
ERT A	Participant 14	-
Government	Participant 15	-
	Participant 16	-
University of Buenos Aires	Participant 17	-
	Participant 18	-

For the interviews conducted in English, or where English translations were filmed during the interview, the questions and responses were summarised. These summaries, and the translations of interviews in Spanish, were then reviewed, and information relevant to the current social profile, apparent trends and potential impacts of WfL were highlighted.

3.5.2 Questionnaire

To provide additional data, in particular for the identification of impacts, a questionnaire was designed based on the steps included in the SIA methodology. The questions correspond to the tasks associated with each step. The purpose of the questionnaire was to increase the quantity of data available for profiling, and to provide information useful for understanding transmission channels and the identification of impacts (direct, indirect and cumulative), risks and mitigation strategies. The questions and corresponding steps in the methodology are shown in **Table 9**.

Table 9 Questionnaire and relevant methodology steps

Number	Question	Step
1	Who do you think will be affected by WfL?	Profiling
2	How may they be affected? (Positively or negatively)	Profiling
3	Describe the current social profile (ie structure of relationships between stakeholders)	Profiling
4	Is this likely to stay relatively unchanged in the future?	Profiling
5	What is the structure of the: <ul style="list-style-type: none"> a) Market for recyclables b) Government c) La Base d) Greenpeace e) Waste for Life f) Other NGOs g) Other relevant organisations 	Profiling
6	What might happen to whom? (What are the potential and expected impacts)	Projection of estimated impacts
7	Through which channels are impacts expected to travel?	Understand transmission channels
8	What do you think the indirect and/ or cumulative impacts will be?	Estimate indirect and cumulative impacts

Number	Question	Step
9	What are the risks (what could go wrong)?	Assess Risks
10	How severe are the consequences?	Assess Risks
11	On what assumptions is the success of the project based?	Assess Risks
12	What problems to you anticipate and how might these be avoided?	Mitigation

The questionnaire was sent to nine contacts of WfL, of whom eight provided responses. The only contact not to provide a response to the questionnaire was a representative from Black and Blue Design, a company based in Buenos Aires working on designs for NPOs and social businesses and entrepreneurs. Although the stakeholders were mostly familiar with WfL and their aims, the questionnaire was accompanied by short description of WfL and the project to ensure that all stakeholders completing the questionnaire had a minimum understanding of the project and the purpose of the questionnaire. A copy of this information and the questionnaire is contained within **Appendix 2**.

The questionnaire was responded to in several different ways. In only one case (Participant A), was it possible to conduct a face-to-face interview. This interview was recorded and then transcribed by the practitioner. With several respondents, the questions were discussed during a phone call with the practitioner. During the conversation, key comments in their answers to each question were noted. The remainder of the respondents provided written responses via email. In the case of Participant H, language barriers required that Erica Lee from WfL go through the questions in Spanish during a phone call, with her responses then being translated by Ms Lee and sent to the practitioner by email. This information is summarised in **Table 10**.

Table 10 Stakeholder identification and response method for questionnaires

Stakeholder	Identification	Method
Waste for Life	Participant A	Interview
	Participant B	Written response
University of Buenos Aires	Participant C	Written response
	Participant D	Written response
	Participant E	Phone interview
Rhode Island School of Design	Participant F	Written response
Working World	Participant G	Phone interview
Cooperative	Participant H	Written response (English) following phone interview (Spanish)

Similarly to the collection of data from the interviews, each of the questionnaire responses was reviewed and comments relating to the social profile, trends and impacts of WfL were

highlighted. Data was collected from two of the stakeholders from both video interviews and questionnaires (Participants 5/ H and 17/ C).

4 Results

As noted by the Interorganizational Committee (2003), in practice, the steps of an SIA often overlap and are not completed as discrete tasks or, necessarily, in the same order in which they appear. As such, the results of some steps are presented together and the order has been altered slightly (mitigation discussed before evaluation).

4.1 Scoping and Problem Identification

As described previously, there are five tasks that should be conducted as part of scoping; identifying limits, methodology, data sources, SIA variables and potentially impacted stakeholders. This section outlines the results of these tasks, and the second step in the methodology, problem identification.

4.1.1 Limits, Methodology and Data Sources

The first task of scoping was to identify the limits of the SIA. The scope of the SIA was constrained by time restrictions (6 months), human resources (one engineering student with assistance from members of WfL) and finances.

As described in **Section 3.2**, a unique methodology was developed for this SIA. As mentioned previously, limits on the project affected the type and quantity of data used. The sources of data used for the assessment were those outlined in **Section 3.5**.

4.1.2 Stakeholder Identification

The complete list of potentially affected stakeholders is shown in **Table 11**.

Table 11 Stakeholder identification

Stakeholder	Identification Method
Street <i>cartoneros</i>	Rainbow diagram
Social Factory	Rainbow diagram
Green Point cooperatives	Rainbow diagram
Greenpeace activists	Rainbow diagram
CEAMSE Landfill operators	Rainbow diagram
DGPRU (Government)	Rainbow diagram
Cartonero cooperatives	Rainbow diagram
Managers/ owners of Chinese sorting units/ recycling factories	Rainbow diagram
University of Buenos Aires	Rainbow diagram
WfL	Practitioner
Other NPOs (Working World, Avina)	Practitioner
General Public – households and businesses/ managers	Practitioner

Stakeholder	Identification Method
ERTs – UST and 19 de diciembre	Practitioner
Trucking companies	Practitioner
Other Universities (UWA, RISD, Queens University)	Questionnaire (Working World)

Each of the stakeholders identified is briefly described in the following sections. The stakeholders have been arranged into four groups: intended beneficiaries, governments and companies, universities and institutes, and organisations.

4.1.2.1 Intended Beneficiaries

In Buenos Aires, WfL has made contact with groups including cooperatives, a social factory and worker-recuperated enterprises with the aim of involving and thereby helping them.

El Ceibo

Founded by Cristina Lescano, this cooperative consists of over 50 families and has developed a high profile. *El Ceibo* has successfully collaborated with residents within the neighbourhood of Palermo who now sort their recyclables from general waste (Baillie and Feinblatt, 2010a). Cristina has stated that the cooperative would be interested in working with WfL once it was certain that the technology could be commercially successful (Baillie and Feinblatt, 2010a).

Bajo Flores

The Bajo Flores Ecological Cooperative of Recyclers manages one of the two operational Green Points. Recyclable materials, collected from 5-star hotels and large apartment buildings, should be brought to the cooperative by two of the private and one public trucking company. However, the cooperative was working well below capacity as a result of materials being diverted prior to being delivered to the Green Point, either by employees of the trucking companies, or by managers at the hotels and apartment buildings. The group has since fallen out of favour with the government and, by 2008, was barely functioning (Baillie et al., 2010b).

Villa Angelica and Etilplast

These two small family cooperatives have both been funded by the Working World and are involved in processing the waste as well as collecting and sorting. When visited in 2007 however, Villa Angelica was in a very fragile position, having lost their only client and suffered from equipment breakages. They were therefore not able to consider working with WfL (Baillie et al., 2010b). In contrast, Etilplast had successfully built a machine that allowed them to produce plastic pellets and were interested in collaborating with WfL (Baillie et al., 2010b).

Avellenada

The Avellenada cooperative is headed by Carlos Perini. Although having previously supported over 50 family groups and been involved in collecting, sorting and processing of plastics, the cooperative was affected by the decline in the value of recyclables in 2008. They have since moved to making wooden furniture and now support only 25 families (Baillie et al., 2010b).

Reciclando Suenõs

The Reciclando Suenõs cooperative has independently moved from collecting and sorting to processing and manufacturing. Using an injection mould, they were producing painting sponges that they sold to a local wholesaler. Unfortunately, in December in 2007 their warehouse burnt down (an illustration of the potential dangers of storing large quantities of flammable plastics, especially alongside potentially faulty electronic equipment) and have since been recuperating from their losses. They have refused any sort of government assistance, insisting that their work is legitimate (Baillie et al., 2010b).

El Álamo

El Álamo is one of the cooperatives currently managing a Green Point. It operates a warehouse directly adjacent to Bajo Flores, however, in contrast to the neighbouring cooperative, El Álamo is currently very successful. This success may be attributed to government assistance (Baillie et al., 2010b).

Abuela Naturaleza

This cooperative is headed by Maria-Virginia Pimentel who calls herself an ‘urban recoverer’. She has also been successful in engaging with the local community in the city of Ituzaingó in the province of Buenos Aires, who separate recyclable products which she collects. She has assisted the Faculty of Architecture, Design and Urbanism at the University of Buenos Aires with their hotpress, developing ideas for products and experimenting with materials (Baillie et al., 2010b). The cooperative has a blog, which contains posts on recycling and waste separation as well as other environmental and health issues.

Renacer Lanzone

Renacer Lanzone is a social factory run by Adam Guevara which operates across from the CEAMSE landfill site. The group operates a sorting centre which removes recyclables from the

waste before it is buried. Due to its success, the operation has been expanded to four centres, with an additional four planned for the site itself (Baillie et al., 2010a).

It is unknown how independent this group is from CEAMSE, however they are very keen to work with WfL (Baillie and Feinblatt, 2010a).

Union Solidaria de Trabajadores

Union Solidaria de Trabajadores (UST, Workers Solidarity Union) is a cooperative which has successfully negotiated with CEAMSE to become contract workers who manage a closed landfill site (Baillie and Feinblatt, 2010a). They also support other cooperatives that work in areas such as recycling and building and say that they have the skills to build the hotpress (Baillie and Feinblatt, 2010a).

19 de Diciembre

Cooperativa de trabajo 19 de diciembre manufactures components for the automobile industry. Its president has expressed interest in manufacturing and selling the hotpress (Baillie and Feinblatt, 2010a).

4.1.2.2 Government and Companies

City Government

Information on the government of Buenos Aires is contained within **Section 2.9.1**.

CEAMSE

As previously mentioned, CEAMSE is a government-owned business which runs the only operational landfill in Buenos Aires. They are paid by the government by weight of waste received, which provides no incentive for the company to promote recycling, which would reduce the weight of waste received and therefore their income. Despite this, CEAMSE has supported a number of cooperatives working in warehouses at the site who collect recyclables out of loads of waste brought to the landfill. This was instigated in response to the health and safety risk to the *cartoneros* who previously worked on the face of the landfill.

Trucking companies

Trucking companies are responsible for collecting the bags of rubbish left in the street by households and businesses. There are five private and one government company, each of whom have been assigned a Green Point to which they should take their loads to so that the recyclable

materials can be removed. As mentioned previously, however, only two of these Green Points are operational, and therefore materials are currently being taken directly to landfill by four of the trucking companies.

4.1.2.3 Universities and Institutes

The University of Western Australia

The University of Western Australia (UWA) has over 22,000 undergraduate and postgraduate students. UWA is a member of the Worldwide Universities Network (WUN), Matariki Network of Universities (MNU) and the Australian ‘Group of Eight’ research universities (The University of Western Australia, 2010).

UWA became involved with WfL through Winthrop Professor Caroline Baillie who came to UWA in 2009 as Chair of Engineering Education. In addition to this dissertation, students from the School of Mechanical Engineering have conducted final-year projects relating to the hot press, such as creating an alternative moulding system.

University of Buenos Aires, Argentina

The University of Buenos Aires (UBA) is located in the San Telmo district and has over 100,000 students (University of Buenos Aires, n.d.). Within the Faculty of Architecture, Design and Urbanism, the Centre for Experimental Production (CEP) led by Carlos Levinton has been involved with WfL since 2007.

Rhode Island School of Design, USA

The Rhode Island School of Design (RISD) has approximately 2,200 students focussing on the creation of works of art and design (Rhode Island School of Design, n.d.). RISD became involved with WfL during 2009 through Professor Caroline Baillie and now runs a class designing using WfL’s hot press.

Queens University, Canada

Queens University (QU) has approximately 22,000 students. Since 1987, QU has been involved with PARTEQ, an NPO which provides researchers with expertise required for product development. QU also runs Innovation Park, a centre focussing on stimulating economic development in Ontario by supporting emerging technologies (Queens University, 2009).

WfL was launched by Professor Caroline Baillie whilst working at QU in 2006. The original hot press was designed by Darko Matovic from Mechanical Engineering (Waste for Life, n.d.). QU

students are involved in projects such as designing and building other machinery and prototyping and refining product designs (Waste for Life, n.d.).

4.1.2.4 Organisations

Medina (2000) found non-government organisations (NGOs) have an important role to play in formation and operation of cooperatives. NGOs and not-for-profit organisations (NPOs) are able to provide assistance with obtaining loans or grants, as well as technical, business and legal expertise and develop initiatives with a good chance of succeeding (Medina, 2000). As well as WfL, several NPOs, in particular Working World, have become involved with *cartonero* cooperatives and are also working to assist them.

Waste for Life

A description of WfL and its proposed involvement with *cartonero* cooperatives is contained within **Section 2.10**.

Working World

The Working World: La Base, founded by Brendan Martin, has been giving micro-loans for workers in “sweatshop industries” in Argentina since 2004. The organisation also provides a fair-trade marketplace for products through Worker’s Bazaar. Its mission is:

- To contribute to the eradication of poverty by offering micro-credit financing to working cooperatives, comprised of individuals who have no other access to capital; and
- To encourage democratic decision-making in the workplace so that more people have control over their economic lives (The Working World).

Working World has already been involved with several *cartonero* cooperatives including Villa Angelica and Etilplast.

AVINA Foundation

The AVINA Foundation was founded in 1994 by Swiss entrepreneur Steven Schmidheiny (AVINA Foundation, 2009). Its mission is to “*contribute to sustainable development in Latin America by encouraging productive alliances based on trust among social and business leaders and by brokering consensus around agendas for action*” (AVINA Foundation, 2009). In support of sustainable recycling within Latin America, AVINA works towards the following actions:

- Strengthen the recycling organizations formed by waste pickers;
- Broaden networks and national and international links;

- Integrate waste pickers in the recycling industry value chain;
- Incorporate waste pickers into public waste management systems;
- Promote the participation of waste pickers in new green markets; and
- Promote inclusive public policies.

WfL made contact with AVINA whilst in Buenos Aires in 2007. AVINA have introduced WfL to some *cartonero* cooperatives.

Greenpeace

Greenpeace International was established in 1971 and now has offices in 41 countries with the aim of environmental conservation and preserving peace (Greenpeace, 2010a). In 2004, Greenpeace supported the submission of a draft 'zero waste' law to the government of Buenos Aires. In 2008, Greenpeace published a report on the management of electronic waste in Argentina and continues to monitor the effects of the Zero Waste law (Greenpeace, 2010b).

4.1.3 Problem Identification

Problem identification involves conducting a needs assessment, which had already been conducted and published by Baillie et al. (2010b). An extensive description of the problem has already been provided in **Section 2.9**.

4.2 Profiling

4.2.1 Key Topics

The review of the video data revealed a number of key topics which arose during the video interviews with one or more stakeholders. The information gathered from the interviews was used to develop an understanding of the social profile and identify naturally occurring trends in the system. The key topics, along with brief comments made by various stakeholders, are shown in **Table 12**.

Table 12 Summary of key topics and stakeholder comments

Topic	Stakeholder	Participant ID	Comments
Current Social Profile			
Type of materials collected	Individual <i>cartoneros</i>	4	Collects cardboard, paper, newspaper and things for own home
	Cooperative A	5	Refers to workers as ‘urban recoverers’, technically <i>cartoneros</i> only collect cardboard and are not recognised by law
	UBA	17	<i>Cartoneros</i> collect plastics, cardboard and paper
Source of materials	Cooperative C	7	Agreement with trucking company to get 50 tonnes/ day but actually get 2,500 kg of which 30-40% is worth nothing
	Cooperative D	8	Material has two origins: from what <i>cartoneros</i> collect on their route and from large producers eg supermarkets
	Government	15	Trucking companies were stealing, now MTE trucks collecting
	Government	16	Up until now trucking companies didn’t pay attention to recyclables. One cooperative made a complaint because no office paper was arriving
Price of materials	Individual <i>cartoneros</i>	1	Get 50[pesos/ kg] for type of cardboard, at another place only 40 but also accept newspaper
	Individual <i>cartoneros</i>	4	Prices for materials fluctuate a little. No single price, set by each agent. Currently cardboard 45[pesos/ kg], paper 30[pesos/ kg].
	Cooperative D	8	At the moment a lot of material but globally prices have dropped so much it's difficult to make it sustainable
	Government	15	Government doesn’t have much power in determining price of materials, done by big companies
	UBA	17	Agents sell materials for 2-3 times what they pay <i>cartoneros</i>
	WfL	B	<i>Cartoneros</i> sell to agents who pay very little and then sell materials on to manufacturers with (presumably) a good mark-up. Exploitative relationship between <i>cartoneros</i> and agents, <i>cartoneros</i> lack the status to demand a better price
Income	Individual <i>cartoneros</i>	1	Initially had low income but increased to 30 pesos
	Individual <i>cartoneros</i>	4	Get 200-300 pesos/ month.
	Cooperative D	8	Workers earn 10 pesos an hour
	UBA	17	Make about 40 pesos/ day recovering 100kg
Travel into the city	Individual <i>cartoneros</i>	2	Comes in on the train

Topic	Stakeholder	Participant ID	Comments
	Individual <i>cartoneros</i>	4	Comes into the city on two trains. “We spend more time waiting for the train than collecting”
Areas of work	Individual <i>cartoneros</i>	1	Have areas of work
	Individual <i>cartoneros</i>	4	Each person has their own place. “Each one has to respect their territory”
	UBA	17	People in a very regular way through the city. Areas not planned or allocated. Principle of equity.
Leaving the streets clean	Individual <i>cartoneros</i>	1	Always leave the street clean but sometimes others leave it messy
	Waste for Life	A	<i>Cartoneros</i> are supposed to close bags again once they have removed materials
Work as individual/ cooperative	Individual <i>cartoneros</i>	1	Had another job that paid more but bosses didn't pay on time
	Individual <i>cartoneros</i>	4	“I've gotten used to working without a boss. You work if you want, you don't work if you don't”. Can collect a greater variety of materials
	Waste for Life	A	Individual <i>cartoneros</i> most affected by changes in government as they are very vulnerable
Hours worked	Individual <i>cartoneros</i>	4	Work Monday to Friday, from 12.30 to 10.30pm
Registration	Individual <i>cartoneros</i>	4	Has an ID card and received gloves. Means they have lawyers and can't go to jail. Doesn't get help from government.
Social security/ insurance	Individual <i>cartoneros</i>	4	Is registered but doesn't think she has insurance
	Cooperative D	8	Cooperative covers life insurance and social security for members. Paid for by income received from large waste generators
Zero Garbage Law	Cooperative D	8	At the time, pushed for the law with Greenpeace. Projects need to work with community
	UBA	D	Law not working properly
Current processing	Cooperative B	6	Currently producing wood shavings “With plastic are perfect”
	Cooperative F	12	Have a machine that washes, grinds and dries plastic. Makes about 7×1000kg bags per day
	Waste for Life	A	Several cooperative already manufacturing a product
	UBA	E	Not difficult to make products but someone has to help them
Autonomy	Government	16	<i>Cartoneros</i> can be stopped by government even if collecting waste is legal
MTE	Cooperative D	8	El Ceibo a member. MTE the largest and most genuine organisation

Topic	Stakeholder	Participant ID	Comments
			of <i>cartoneros</i> , has 1,500 members. Has both benefits ("more power to demand bigger concessions from the state") and problems ("bigger, more complex problems")
	Waste for Life	A	Umbrella organisation
CEAMSE	Cooperative E	9, 10	"Horrible company"
	UBA	18	Have built warehouses to remove <i>cartoneros</i> from landfill
Relationship with community	Cooperative F	11	Very good relationship, try to get the same people going back to same area. Want community to separate materials
	UBA	17	<i>Cartoneros</i> return to same area, people realise they are not a marginal or dangerous person, form a relationship with neighbours. A collaboration system between people who are not usually connected
Relationship with universities	Cooperative A	5	From the point of view of cooperatives, universities tend to be quite closed
	Cooperative D	8	Big difference between the State and universities and what goes on underneath
	UBA	C	UBA has experience training <i>cartoneros</i> in different fields
	RISD	F	No connection between <i>cartoneros</i> and universities. Fear that research will become an intellectual pursuit.
Apparent Trends			
Government policy	Individual <i>cartoneros</i>	1	Will continue until Macri kicks us out, "but we'll see if they can do it"
	Individual <i>cartoneros</i>	4	Wants us to work for him for 150 pesos/ month which is not enough. Would affect 2000 families
	Cooperative D	8	All governments are bad
	Cooperative E	9, 10	New government is good for us but not for individual <i>cartoneros</i>
	Government	16	Government doesn't like families in the streets
Could do more with some help (trucks/ machines)	Individual <i>cartoneros</i>	1	With a truck could do more themselves, make more money
	Cooperative E	9, 10	Need to pull resources together
	Government	16	Need technology development, resources, money
	UBA	17	<i>Cartoneros</i> should have some means of production
Official recycling scheme	Cooperative D	8	Process of accumulation of organisations putting pressure on the government to create a system which includes <i>cartoneros</i>

Topic	Stakeholder	Participant ID	Comments
	Government	15	Government has agreed to include <i>cartoneros</i> but not written in law
	Government	16	Government needs a policy. Industry wants materials to be collected. Trucking companies are building separating units
	UBA	18	Difficult to organise the informal sector. Need to start to use organic waste
	Waste for Life	A	Doubt individual <i>cartoneros</i> will have a role in government plans
Uncertainty about future	Cooperative C	7	No continuity with government
	Government	15	Don't know how the cycle is moving now
	Government	16	Don't know what will happen with individual <i>cartoneros</i>
	Waste for Life	A	Whole system is changing as we speak

4.2.2 Current Social Profile

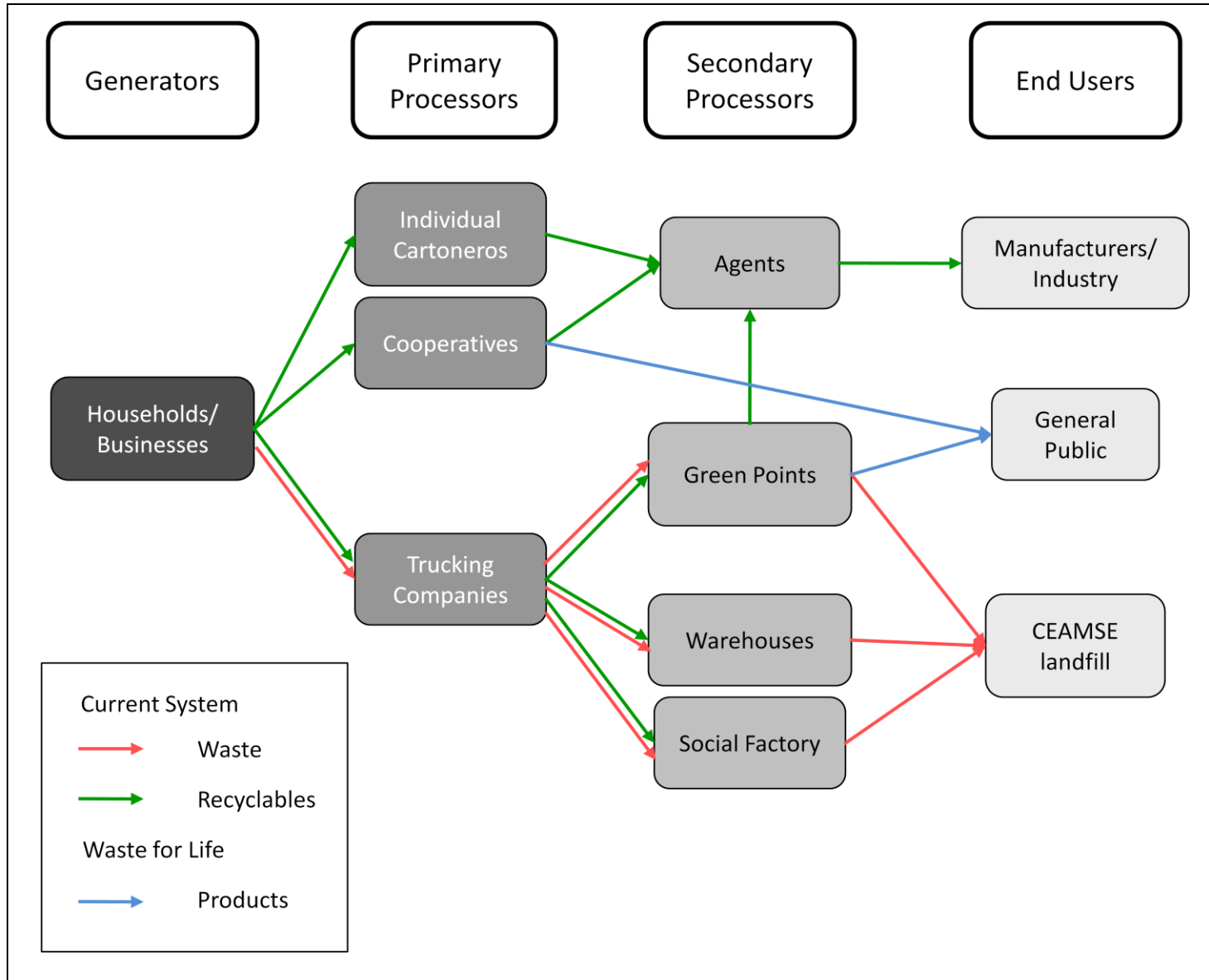
The social profile is the way in which the various stakeholders within the waste management and recycling system interact. The following aspects of the system are relevant to the understanding of the current social profile:

- The prices of materials received by agents are affected by industry demand, with any increases or decreases then being passed on to *cartoneros* (Participants 4, 17 and B).
- Participant 17 noted that *cartoneros* currently conduct the most difficult part of the recycling system (collection and sorting) for the least reward.
- *Cartoneros* generally get along well with one another although problems do arise when some don't leave the streets clean (Participants 1, 4 and 17).
- *Cartoneros* working individually are generally happy with their work and are not part of a cooperative out of choice (Participants 1 and 4).
- Some *cartoneros* have a good relationship with the community, formed by collecting materials from the same area (Participants 11 and 17).
- Participants 5, 8 and F stated that there is currently no relationship between the cooperatives and UBA as they do not currently interact through the transfer of materials. This was contradicted by Participant 17 from UBA who described training the university had provided *cartoneros*. It is assumed that the number who have been involved with UBA is small, and therefore the majority of *cartoneros* believe there is no interaction between the two stakeholder groups.
- Opinions of CEAMSE vary between stakeholders. Cooperatives (Participants 9 and 10) view the company negatively, while Participant 18 from UBA noted the ways in which they have supported *cartoneros*.

Figure 3 shows the flow of waste and recyclables between stakeholders in Buenos Aires, determined from a review of the data. The system has been arranged into four stages, with each stakeholder positioned within one of these as either a waste generator, primary or secondary processor or end user. Waste is currently processed by two stakeholders before moving to the end user. As the materials are transferred through the system, their value increases. WfL's proposal alters the social profile by connecting cooperatives directly to end users, removing the role of secondary processors. The cooperatives then receive income from materials with a greater value instead of allowing agents to benefit from the increase in value of the materials. For involved cooperatives, including those already running Green Points, this provides a source of income additional to their current activities.

A stakeholder's position within this system influences how much they are affected by the behaviour of other stakeholders and changes to the system. Generally, the further towards the right a stakeholder is positioned, the greater their influence. There are some exceptions to this, however, such as the Green Points still being reliant on the trucking companies to deliver materials to them. This is also not to say that secondary processors and end users are in complete control over the activities of primary processors. For example, industry is still reliant on *cartoneros* to supply the materials, however are able to dictate which materials are accepted and the price paid. It should be noted that individual *cartoneros* have been separated from cooperatives as their position within the system is slightly different, which leads to increased vulnerability to government decisions.

Figure 3 Flow of materials between stakeholders in Buenos Aires



4.2.3 Apparent Trends

The data review revealed the following points regarding trends occurring within the system:

- There is a willingness within cooperatives to move into processing of the materials they collect (and in some cases product manufacture), identified by Participants 6 and 12. Without support however, this process is very slow. Participants 9, 10 and 16 identified money and resources such as trucks and equipment as factors that limit the ability of cooperatives to expand their capabilities.
- Participants 15, 16 and A confirmed that it is very difficult to predict what may happen to the system in future, while Participant C noted that there is no continuity with government.
- The need to develop an official recycling scheme was noted by several stakeholders (Participants 8, 15 and 16), although the difficulties associated with this were recognised by Participant 18. Participant A predicted that a government policy would be likely to exclude individual *cartoneros*.

4.3 Transmission Channels

Transmission channels were identified by the practitioner based on a review of the data and understanding of the current social profile. Six types of transmission channels were relevant to WfL's proposal. The potential changes to each of these are shown in **Table 13**, and, unless stated otherwise, affect the cooperatives. Which of these transmission channels is relevant to each of the social impacts identified is shown in the summary in **Table 15**.

Table 13 Identified transmission channels

Transmission Channel	Change	Comments
Prices	Wages	Increase/ decrease income
	Consumption	As a result of increased income
Assets	Skills and training	Use of hot press
	Equipment	Ownership of hot press
	Social	Change position within society
	Knowledge	Improved for universities and NPOs
	Management of resources	Use of previously low value materials
	Facilities	Improve working environment
Access	Markets	Create market for new product Limit access to market for existing materials
	Microcredit	Involvement of Working World
	Materials	Source of recyclables for both cooperatives and individual <i>cartoneros</i>
	Government support	Funding, equipment

Transmission Channel	Change	Comments
Employment	Create new roles	
Authority	Formation of cooperative	
Safety	Exposure to hazards	

4.4 Identification and Assessment of Impacts and Risks

An understanding of the current system and apparent trends was used to predict natural changes, or those that are likely to result in social impacts that are independent of the activities of WfL. The potential impacts of WfL, or those that may occur in addition to the natural changes, were identified by stakeholders in the questionnaire and by the practitioner based on the current social profile. The impacts of WfL have been grouped into economic, health and social wellbeing, institutional, liveability, and family and community impacts. No impacts grouped as cultural, legal or gender relations were identified.

As described previously, each impact has also been assessed according to a number of criteria, namely probability, extent, duration, vulnerability and potential for mitigation. A summary of all impacts and risks, along with how they have been classified according to each criterion, is given in **Section 4.4.9**. In some cases, the classification of an impact according to certain criteria required an assumption to be made. Where this has occurred, the assumptions are identified in the discussion of the impact, and are summarised in **Section 5.1.1**. For negative impacts where a mitigation strategy has been identified (corresponding to a medium to high potential for mitigation), the specific strategy is described in **Section 4.5**.

4.4.1 Natural Changes

In order to identify the impact of WfL, it is necessary to predict what changes are likely to occur without the implementation of the proposal. As noted by several of the stakeholders however, the highly complex and variable nature of the system makes prediction of these changes very difficult. Despite the difficulties, however, the apparent trends described above were used by the practitioner to identify a number of potential social impacts.

For individual *cartoneros*, it is possible that they may be excluded from an official recycling scheme developed by the government, removing their ability to work and therefore their source of income. This impact has a large extent and was considered of long duration as it is likely to be a permanent change. The consequence of removing their current income source is severe, particularly as their income is already very low and they are therefore unlikely to have any savings or assets to support them whilst searching for alternative work. There is a medium potential for mitigation of this impact, although it is not the responsibility of WfL to implement.

The individual *cartoneros* could form a cooperative, or become involved with an existing cooperative to reduce their vulnerability to potential changes and therefore avoid the associated negative impact.

Another potential impact is the cooperatives being affected by changes in government policy, if they were to lose any support currently received. This impact is possible, with a medium extent, as it was assumed that only a few cooperatives receive government support. Although being very difficult to predict, the duration was classified as medium to long-term. Depending on the amount of support currently received by the cooperative, the consequence was considered moderate to major. As the impact is dependent on decisions made by the government, the potential for mitigation is low, although increasing the autonomy of the cooperative would reduce the severity of the consequence. As identified previously however, individual *cartoneros* are currently not part of a cooperative by choice.

Finally, for both cooperatives and individual *cartoneros*, a drop in the price of materials due to low international demand would lead to a lower income. This impact has previously occurred as a result of the global financial crisis that began in 2008. Although the timing of this impact is unknown, it is likely that it will occur again. It was classified as having a large extent and a short to medium-term duration, as it is expected that prices will eventually recover. The consequence for the *cartoneros* is major, although more so for the individual *cartoneros* who already have a lower income. As prices are dependent on global demand, the potential for mitigation is low.

4.4.2 Economic

A large proportion of the impacts identified were classified as economic impacts. These impacts relate to changes in income, autonomy, employment and markets. They are likely to be transferred through many transmission channels such as prices, access, assets, employment and authority.

One of the potential positive social impacts, and also an aim of WfL, is to increase the income of the *cartoneros* working in cooperatives, by enabling them to manufacture products using the hot press that they can sell for a higher profit than their current materials. A direct impact of the project is the increase in income allowing the *cartoneros* to be more financially able to provide for themselves and their dependents. This impact was identified by Participants A, F, G and H. The probability that this impact will occur is possible, will have a medium extent and long-term duration. The consequence, due to the impact an increase in income will have on the *cartoneros'* lives, is considered major.

An increase in the *cartoneros* income may cause an indirect positive impact on local businesses, should the *cartoneros* increase their spending. This impact was identified by Participants A and B. The probability of this impact was deemed possible, as it is dependent on the success of the project and the way in which the *cartoneros* intend to use the additional income. Assuming that the production is sustainable, the impact will have a long duration, however, the extent is likely to only be small, with few businesses experiencing any significant changes. The consequence of the impact was classified moderate.

Despite these positive impacts, there is a potential negative impact that may affect the *cartoneros* indirectly through an increase in income. The additional income may be misused by the *cartoneros*, with the change therefore not increasing their wellbeing. This was identified by the SIA practitioner, and was thought unlikely to occur. It is anticipated that, should this occur however, some sort of remedial action would be taken by the cooperative, thereby restricting the duration of the impact to short-term. The impact has only a small extent, but for the cartonero(s) affected has the potential to cause major consequences. For this impact, there is a low potential for mitigation as it is largely dependent on the desires and actions of the *cartoneros* themselves. This is not an area which WfL can control and, in accordance with their goal of increasing the autonomy and self-sufficiency of the cooperatives, should not seek to unless consequences become severe.

The involvement of cooperatives in the project also has the potential to lower the income of the *cartoneros*. This may occur if there is no market for the products being manufactured, which was identified by Participants F, G and H. Concerns regarding what can be manufactured and sustainable markets for the products were also expressed by Participants 8 and 11. Without a mitigation strategy this direct impact is considered possible. As it would only affect the involved cooperatives, the extent is medium, however, it has a consequence deemed major. The duration of the impact was classified as short to medium because, if unsuccessful, the cooperative is likely to return to their previous activities. The potential for mitigation is high as a mitigation strategy has been identified that is not difficult to implement.

A lower income may also result from a lack of source materials, with the cooperatives therefore being unable to continue to manufacture the same quantity or quality of products. As the quantities of materials required initially are relatively small, this is a cumulative impact which is currently unlikely, and would only occur should the project be highly successful and the quantity of products manufactured or number of cooperatives involved becomes large. The extent of the impact is medium as it affects the involved cooperatives. As for the previous

impact, the cooperatives are not expected to continue manufacturing if this problem arose, and therefore the impact would only have a short to medium duration. The consequence is major, however, there is a moderate potential for mitigation. This impact was identified by Participant G.

The negative impact of the cooperatives making no profit from the products may occur in a plethora of ways. First, the cost of electricity reducing profit was identified by Participants A, C and D and also raised in one of the video interviews (Participant 11). The probability of this impact was classified as possible. In addition, aspects of the manufacturing process such as efficiency (determined by time requirements and complexity), and potential security costs associated with the hot press, may result in no profit for the cooperatives. These issues were raised by Participants 8 and 11 in the video interviews and Participant C in the questionnaire. The probability of the impact occurring in this way was considered unlikely by the SIA practitioner. Finally, as identified by Participants C and D, the products may not be sold if they are more expensive than non-recycled alternatives. The probability of this leading to the impact was classified as unlikely. Regardless of the cause of the impact, no profit for the cooperatives has a medium extent, is short to medium in duration and has major consequences. There is a medium to high potential for the mitigation of this impact.

The second aim of WfL is to make the cooperatives more autonomous, which is a potential direct positive impact, identified by Participant A. The probability of the impact is possible, and has medium extent as it affects only the involved cooperatives. Although the desired duration would be long-term, it has been classified as medium to long-term as it may be affected by future changes that cannot be predicted, potentially reducing the duration. The consequence of the impact is major.

A direct positive impact identified by Participant H is the addition of a new job within the cooperative, involving a different set of skills that may be more suited to some workers. Participant H states that for the sorting of materials to be cost-effective it must be conducted quickly, which some workers are not able to achieve. Therefore, the addition of a different role creates an opportunity for *cartoneros* to work in a way which doesn't require such a high efficiency. The probability of this impact is almost certain and, if the use of the hot press continues, has a long-term duration. As it will only affect the involved cooperatives, the extent is medium, while the consequence is classified as moderate.

Should the cooperatives obtain a loan to buy the hot press, there is the potential for this to cause additional financial problems, if the project is not successful enough to enable them to repay this

debt. This is a direct negative impact of the project identified by Participant A, however is considered unlikely to occur. The impact is of medium extent and is expected to be of short to medium duration. Causing additional financial hardship for the cooperative is considered an impact of major consequence. The potential for mitigation is moderate, as a mitigation strategy has been identified but may be difficult to implement.

Directing time and resources away from their usual activities to become involved with WfL may affect the profitability of their current income sources. Two indirect impacts have been identified in relation to changes to their current work. First, there is the potential for the cooperatives to lose the markets for their existing products. This was identified by Participant G, and was classified by the practitioner as unlikely. The extent (only involved cooperatives) is medium, and duration is short, as it is expected that the cooperatives would be able to reconnect with old agents, or find new buyers for sorted materials. The consequence was classified as moderate and the impact has a low potential for mitigation, as it is dependent on the distribution of work within the cooperatives, and behaviour of the agents.

Secondly, as identified by Participant B, the relationship the cooperatives have with agents may be negatively affected. This may occur if the cooperatives no longer supply the agents with materials. This impact is also considered unlikely to occur with a medium extent and moderate consequence. The duration of this impact is medium as it is highly unlikely that this issue would continue in the long term. There is a medium potential for mitigation.

Successful implementation of the project may lead to the formation of new cooperatives, an indirect positive impact. This is possible should individual *cartoneros* become aware of the benefits associated with being part of a cooperative, particularly if these benefits are increased through involvement with WfL. This not only has the potential to increase their income, but also to make them less vulnerable to changes to the system made by the government. This impact was identified by the practitioner however is considered unlikely, as several individual *cartoneros* interviewed (Participants 1 and 4) had deliberately chosen not to join a cooperative. The extent was classified as medium and the duration long, assuming the new cooperatives stay together. The consequence of this impact is major.

Finally, the use of the hot press may result in damage to the cooperatives' equipment or property should it be the cause of a fire at their facility. This impact was identified by Participant A and is considered unlikely. It should be noted that, whilst the hot press does present a risk of this negative impact occurring, it may be less likely than through the use of current processing equipment, particularly if the cooperatives lack the technical understanding

or resources to safely maintain this machinery. This impact only affects cooperatives using the hot press, and therefore has a medium extent. The duration was classified as short to medium-term as it is dependent on the degree and time taken to repair the damage. The consequence is major, however there is a high potential for mitigation.

4.4.3 Health and Social Wellbeing

The prospect of an increased income and greater autonomy is likely to cause an increase in the aspirations of the *cartoneros*, both those involved with the project and, to a lesser extent, those from other cooperatives and working individually. This impact was identified by Participant 5 in the video interviews (Participant H in the questionnaire). This is a direct positive effect with a moderate extent and long-term duration. The consequence, of markedly increasing the hopes or expectations of what the *cartoneros* can achieve, is considered major.

As no members of the cooperatives most likely to be involved in the project have not been interviewed within this SIA, it is unknown what expectations they have regarding the intended increase in income. WfL's aim is simply to increase income and does not contain a specific target for this increase. During a discussion with a coordinator of WfL, it was suggested that doubling of income would be a desirable yet realistic goal. It is possible that the expectations of the *cartoneros* differ from those of WfL. Disappointment with the impacts of the project is a direct negative impact. It has been classified as possible, with a medium extent, short to medium duration and moderate consequence. There is a high potential for mitigation.

A similar impact to the increase in aspirations is an increase in the pride and satisfaction that the *cartoneros* have with their own work by feeling like greater contributors to the system. This direct positive impact was identified by Participant A, and, as affects the involved *cartoneros*, was classified as having a medium extent. Assuming that the project continues, the duration of this impact is long-term and the consequence is moderate.

Several social impacts were identified relating to personal safety and hazard exposure. A direct negative impact is the health and safety risk posed by the hot press, particularly if it is not used or maintained correctly. This impact was identified by Participant A and has been classified as possible. The duration of the impact is long-term, corresponding to the use of the hot press, which will always present some risk, despite efforts to reduce the probability of an incident. The potential for injuries to the *cartoneros* makes the consequence severe, however there is a high potential for mitigation.

There is also a potential health and safety risk to the users of the products manufactured, although this is highly dependent on the particular product(s) being made. This indirect impact of the project was identified by Participant A. Although being difficult to determine before knowing exactly which product(s) are going to be manufactured and their intended market, the probability is classified as rare. For the initial scenario when the quantity of products is not large, the extent of the impact is medium. The duration of the impact is the period when the buyer has the products, which is likely to be only in the short to medium term. Again, the potential for human injury results is a severe consequence, however there is a high potential for mitigation.

A negative impact identified by Participant A is that the products made by the cooperatives could result in injury or damage to property for example if they are the cause of a fire. The probability of this impact was classified as rare as the composite material is not flammable and is non-toxic. Should an incident occur, the expected extent is medium to large with major consequence. The duration of the impact is short and the potential for mitigation is high.

4.4.4 Institutional

The success of the project will provide WfL with a proof of concept, demonstrating that their technology can be applied to achieve their goals. This is a direct, positive impact identified by Participant G. This impact was classified as possible, the same possibility as the impacts arising from the success of the project. Initially, this is only likely to affect WfL and possibly a small number of other NPOs and therefore will have a small extent, although continued success may increase the extent of the impact to more organisations or governments. The duration of this impact is short, but may also be increased with continued success. The consequence is considered major, due to the implications for further work for WfL and other organisations.

For all involved universities, involvement in the project is likely to result in learning opportunities for students and academics, which is a positive direct impact. This was identified by Participant G. The extent is large, as students are expected to be involved from each university. For this WfL project, the duration of this impact is short to medium as there is a limit to the amount of study required. Should WfL become involved in additional projects however, this impact may increase in extent and duration. The significance of the impact was classified as moderate.

Working World's involvement in the project is likely to result in growth into a new area, which is a direct positive impact on the organisation. This benefit was identified by Participant G and, as it only affects one organisation, has a small extent. Depending on the success of the project

and Working World's willingness to remain involved, the duration of this impact may be from medium to long-term. The consequence has been classified as moderate.

A further positive, indirect impact identified by Participant G is that the project may encourage other NPOs to strive for good practice in their activities. This may occur as a result of seeing concepts such as stakeholder consultation and conducting an SIA implemented successfully by WfL. This impact was classified as possible and of small extent, as it is expected only to affect a few other NPOs. The duration of the impact on the affected organisations is anticipated to be medium to long-term, and the consequence is minor to moderate, as it is not expected to dramatically alter the way in which the NPOs function.

For the involved universities, their involvement with WfL is likely to enhance their reputation, both among other universities and in the wider community. This indirect impact was identified by the SIA practitioner. The extent was classified as large as there are four universities involved. The duration is expected to be medium to long-term, however this depends on the length of each university's involvement with WfL. The consequence is considered moderate.

4.4.5 Liveability

An indirect impact identified by Participant D is the improvement of conditions for workers as a result of the cooperative having more money to spend on their facility. This impact was classified as possible and of medium extent. Assuming the increase in income is sustained and no property damage occurs, the duration of this impact is long. The consequence has been classified moderate to major, as it depends on the current working conditions and the degree of the changes.

4.4.6 Family and Community

As mentioned previously, changing the nature of the work done by the cooperative (engaging in manufacture as well as sorting), changes their position within the waste management system. This is likely to affect the relationships that the cooperatives have with other groups within the system, such as the community and the university. Improvements to these relationships are positive indirect impacts for all stakeholders involved.

Improving the relationship between the cooperatives and the community, particularly in the neighbourhoods from where they collect waste, may result from the cooperatives moving to manufacturing and thereby not being seen as just scavengers, but contributors to the economy. As mentioned previously, one cooperative has already become involved with the community who now separate their recyclables from general waste. This impact was identified by

Participants 12, 17 and A. Both the cooperatives and members of the general public would be affected. As a result, the extent of this impact is large and it has been classified as possible. Assuming that the project is sustainable, the duration is long-term and is of moderate consequence for the cooperatives, yet only minor consequence for the general public.

As well as specifically improving the relationship between involved cooperatives and community, more generally, the proposal has the potential to improve relations between these and other stakeholders such as universities and buyers of the products (companies and the general public). This positive, indirect impact was identified by Participants C and G. Participant 8 stated that the UBA is seen as 'closed' by the *cartoneros* and therefore may be particularly significant for these stakeholders. It is considered likely with a large extent, due to the number of stakeholders affected. The duration has been classified as anywhere from short to long-term and is highly dependent on the success of the project and the degree to which the affected stakeholders are willing to participate and communicate with one another. The consequence of the impact is moderate.

An indirect impact of the project is the increase in wages causing tensions within the cooperative (possibly relating to the distribution of work and/ or wages), resulting in a loss of the values of the cooperative. This was identified by the SIA practitioner, however is considered unlikely to occur. The duration of the impact is short as it would be very difficult for the cooperative to continue earning additional income if serious organisational issues were to arise. As only involved cooperatives may be affected, the extent is medium, yet the potential consequences are severe. Similarly to one of the negative economic impacts discussed previously, the potential for this impact to be mitigated by WfL is low as it is dependent on attitudes within the cooperative, which WfL should not attempt to control.

4.4.7 Environment

Although focusing primarily on social impacts, the assessment also identified several ways in which the project could affect the environment. Changes to people's environmental was included in Vanclay's list of social impacts (cited in Becker and Vanclay, 2003) mentioned previously. Both of environmental impacts identified are direct, however the initial scale of the project will restrict the extent of these impacts to being very small. They have therefore been classified as cumulative impacts, as it is only at a larger scale that the impact will be significant enough to be worth noting. Impacts on the environment may also be considered as changes to liveability and therefore affect all stakeholders within Buenos Aires.

A potential positive impact was identified by Participant G is the diversion of materials, such as plastic bags, from landfill. It is classified as being a medium to long-term impact with major consequences, given that there is only one remaining operational landfill in Buenos Aires.

Despite diverting materials from landfill being considered an environmental benefit, it is possible that the products may themselves be environmentally damaging if they are not recycled or disposed of correctly. This impact was identified by Participant A and has been classified as medium term. The probability of the impact is rare, as it is considered highly unlikely that the product will result in environmental damage that exceeds what is already occurring as a result of the materials being disposed of to landfill. The consequence would only be minor, as the anticipated production is only small scale and therefore cannot cause widespread environmental issues.

4.4.8 Significance

As discussed previously, the significance of each of the identified impacts has been determined according to their probability, extent, duration, the vulnerability of the stakeholder(s) affected and potential for mitigation (for negative impacts). Impacts were considered more significant if they had a higher probability, greater extent, longer duration, affected more vulnerable stakeholders and had a low potential for mitigation. Conversely, less significant impacts had lower probability, lesser extent, shorter duration, affected less vulnerable stakeholders and had a high potential for mitigation.

The potential social impacts of WfL, grouped by significance are shown in **Table 14**. The positive impacts are highlighted in green, whilst negative impacts are shown in red. The stakeholder affected by the impact is also identified, which leads to some impacts appearing twice, with different significance depending on the affected stakeholder. For impacts with more than one cause, the cause is described in round brackets.

4.4.9 Summary

A summary of the characteristics of all the impacts identified is shown in **Table 15**.

Table 14 Significance of social impacts

Major		Moderate		Minor	
Description	Stakeholder Affected	Description	Stakeholder Affected	Description	Stakeholder Affected
Increased income	Involved Cooperatives	Respect in neighbourhood	Involved Cooperatives	Respect in neighbourhood	General Public
More autonomous	Involved Cooperatives	Support of local businesses	General Public	Better stakeholder relationship	UBA
More employment roles	Involved Cooperatives	Better stakeholder relationships	Involved Cooperatives	Better stakeholder relationship	General Public
Increase income for other cooperatives (get involved)	Cooperatives	Growth into new area	Working World	Good practice	NPOs
Formation of new cooperatives/ involve individual <i>cartoneros</i>	Cooperatives and individual <i>cartoneros</i>	Proof of concept	WfL	Reduce waste	Environment
Pride in work	Involved Cooperatives	Learning for students	Universities	Bad relationship with agents	Agents
Increase aspirations	Involved Cooperatives	Enhance reputation	Universities	Injury/ damage to property	General Public
Better conditions for workers	Involved Cooperatives	Lower income (cost of electricity)	Involved Cooperatives	Products environmentally damaging	Environment
Damage to equipment/ property	Involved Cooperatives	Lower income (no market for products)	Involved Cooperatives		
Health and safety risk to operators of hot press	Involved Cooperatives	Lose market for existing materials	Involved Cooperatives		
		Lower income (manufacture too complex and time consuming, security costs, efficiency of press)	Involved Cooperatives		
		Lower income (products too expensive)	Involved Cooperatives		
		Lower income (lack of source material)	Involved Cooperatives		
		Additional financial stress (unable to repay loan)	Involved Cooperatives		

Major		Moderate		Minor	
Description	Stakeholder Affected	Description	Stakeholder Affected	Description	Stakeholder Affected
		Misuse of additional income	Involved Cooperatives		
		Bad relationship with agents	Involved Cooperatives		
		Lose values of cooperative	Involved Cooperatives		
		Disappointment with project outcomes	Involved Cooperatives		

Table 15 Summary of social impacts

Description	Cause	Impact Group	Transmission Channel	Identified by (Participant)	Stakeholder Affected	Vulnerability	Order	Type	Probability	Extent	Duration	Consequence	Potential for Mitigation	Significance
No work	Excluded from official scheme	Legal	Employment	A	Individual <i>cartoneros</i>	High	Natural change	Negative	Possible	Large	Long	Severe	Medium	Major
Lose work and support from government	Change of government or policy	Institutional	Access (government support)	C	Involved cooperative	High	Natural change	Negative	Possible	Medium	Medium-Long (very difficult to predict)	Moderate-Major	Low	Moderate
Lower income	Drop in price of materials due to low demand	Economic	Prices (wages)	Practitioner	Cooperatives and individual <i>cartoneros</i>	High	Natural change	Negative	likely	Large	Short-medium	Major	Low	Major
Increased income	Selling products	Economic	Prices (wages) Access (market)	A, C, F, G, H	Involved cooperatives	High	Direct	Positive	Possible	Medium	Long	Major	NA	Major
Support of local businesses	<i>Cartoneros</i> with more income to spend	Economic	Prices (change consumption)	A	General public	Low	Indirect	Positive	Possible	Small	Long	Moderate	NA	Moderate
Misuse of additional income	<i>Cartoneros</i> with more income to spend	Economic	Prices (change consumption)	Practitioner	involved cooperative	High	Indirect	negative	Unlikely	Small	Short	Major	Low	Moderate
Lower income	No market for products	Economic	Access (markets)	C, F, H	Involved cooperative	High	Direct	Negative	Possible	Medium	Short-medium	Major	Medium	Moderate
Lower income	High demand for recyclable materials results in lack of source material	Economic	Access (materials) Prices (changes to consumption)	G	Involved cooperative	High	Cumulative	Negative	Unlikely	Medium	Short-medium	Major	Medium	Moderate
Lower income	Cost of electricity	Economic	Prices (wages)	A, C, D	Involved cooperative	High	Direct	Negative	Possible	Medium	Short-medium	Major	Medium	Moderate
Lower income	Manufacture too complex and time consuming, security costs, efficiency of press	Economic	Prices (wages)	C	Involved Cooperative	High	Direct	Negative	Unlikely	Medium	Short-medium	Major	Medium	Moderate
Lower income	Recycled products more expensive than others	Economic	Prices (wages)	C, D	Involved Cooperative	High	Direct	Negative	Unlikely	Medium	Short-medium	Major	High	Moderate
More autonomous	Not so reliant on selling raw recyclable materials	Economic	Access (markets)	A	Involved cooperative	High	Direct	Positive	Possible	Medium	Medium - long	Major	NA	Major
More employment roles	Create a new sort of job	Economic	Employment	H	involved cooperative	High	Direct	Positive	almost certain	Medium	Long	Moderate	NA	Major
Additional financial stress	Unable to repay loan	Economic	Access (microcredit)	A	Involved cooperative	High	Indirect	Negative	Unlikely	Medium	Short-medium	Major	High	Moderate
Lose market for existing materials	Replace with attempt to make and sell new product	Economic	Access (markets)	G	Involved cooperative	High	Indirect	Negative	Unlikely	Medium	Short	Moderate	Low	Moderate

Description	Cause	Impact Group	Transmission Channel	Identified by (Participant)	Stakeholder Affected	Vulnerability	Order	Type	Probability	Extent	Duration	Consequence	Potential for Mitigation	Significance
Bad relationship with agents	Diverting materials from brokers	Economic	Access (markets)	B	Agents Involved cooperative	High Low	Indirect	Negative	Unlikely	Medium	Medium	Moderate	Medium	Minor Moderate
Formation of new cooperatives/ involve individual <i>cartoneros</i>	Individual <i>cartoneros</i> see benefits of cooperatives	Economic	Authority (creation of coop)	Practitioner	Individual <i>cartoneros</i>	High	Indirect	Positive	Unlikely	Medium	Long	Major	NA	Major
Damage to equipment and/ or property	Damage to equipment and/ or property due to fire caused by hot press	Economic	Assets (equipment)	A	Involved cooperative	High	Direct	Negative	Unlikely	Medium	Short-medium	Major	High	Major
Aspirations	Increase expectations of what is achievable	Health and social wellbeing	Access (skills and training)	Practitioner	Involved cooperative	High	Direct	Positive	Likely	Medium	Long	Major	NA	Major
Disappointment with project outcomes	Lower increase in income than expected	Health and social wellbeing	Prices (wages)	Practitioner	Involved cooperative	High	Direct	Negative	Possible	Medium	Short-medium	Moderate	High	Moderate
Pride in work	Feel like contributors to system	Health and social wellbeing	Assets (social)	A	Involved cooperative	High	Direct	Positive	Likely	Medium	Long	Moderate	NA	Major
Health and safety risk to operators of hot press	Not good enough understanding of hazards	Health and social wellbeing	Assets (skills and training)	A	Involved cooperative	High	Direct	Negative	Possible	Medium	Long	Severe	High	Major
Injury/ damage to property	Products are a health/ safety risk	Health and social wellbeing	Safety	A	General public	Low	Indirect	Negative	Rare	Large	Medium	Major	High	Minor
Proof of concept	Successful implementation	Institutional	Assets (knowledge)	G	WfL	Medium	Direct	Positive	Possible	Small	Short	Major	NA	Moderate
Learning for students	Involved in research	Institutional	Assets (knowledge)	G	UBA	Low	Direct	Positive	Likely	Large	Short-medium	Moderate	NA	Moderate
Growth into new area	Involvement with cooperatives	Institutional	Assets (knowledge)	G	La Base	Medium	Direct	Positive	Likely	Small	Medium-long	Moderate	NA	Moderate
Good practice	Encouraged/ demonstrated by project	Institutional	Assets (knowledge)	G	NPOs	Medium	Indirect	Positive	Possible	Small	Medium-long	Minor-Moderate	NA	Minor
Enhance reputation	Advertise involvement with NPO and social development	Institutional	Assets (social)	Practitioner	Universities	Medium	Indirect	Positive	Likely	Large	Medium-long	Moderate	NA	Moderate
Better conditions for workers	Increased income to spend on facility	Liveability	Assets (facilities)	D	Involved cooperative	High	Indirect	Positive	Possible	Medium	Long	Moderate-Major	NA	Major
Respect in neighbourhood	Not just seen as scavengers but part of economy	Family and community	Assets (social)	A	Involved cooperative General public	High Low	Indirect	Positive	Possible	Large	Long	Moderate	NA	Moderate Minor
Better communication	Linking of design, coops, market and	Family and community	Access (information)	C, G	Universities Involved	Low High	Indirect	Positive	Likely	Large	Short-long	Moderate	NA	Minor Moderate

Description	Cause	Impact Group	Transmission Channel	Identified by (Participant)	Stakeholder Affected	Vulnerability	Order	Type	Probability	Extent	Duration	Consequence	Potential for Mitigation	Significance
on/relationships	universities and community				Cooperative General Public	Low								Minor
Lose values of cooperative	Tensions from distribution of income/ work	Family and community	Prices (change consumption)	Practitioner	involved cooperative	High	Direct	Negative	Unlikely	Medium	Short	Severe	High	Moderate
Reduce waste	Divert more materials from landfill	Environment (Liveability)	Assets (management of resources)	G	Environment (All in Buenos Aires)	NA	Cumulative	Positive	Possible	NA	Medium-long	Minor-moderate	NA	Minor
Products environmentally damaging	Not recycled/ disposed of appropriately	Environment (Liveability)	Assets (management of resources)	A	Environment (All in Buenos Aires)	NA	Cumulative	Negative	Rare	NA	Medium	Minor	Medium	Minor

4.5 Mitigation

This section describes the mitigation strategies intended to reduce the significance of as many of the negative social impacts identified as possible. These were either proposed by questionnaire respondents or the SIA practitioner. The mitigation strategies have been grouped into three areas, those relating to finding a market for products, minimising the health and safety risk to the *cartoneros*, and reducing the financial risk to cooperatives.

In collaboration with Working World, WfL is in the process of developing criteria to assess whether potentially involved cooperatives have the necessary technical, financial and organisational capabilities. Before beginning the project, cooperatives will have to demonstrate that they meet these criteria, which are being designed to maximise their chances of success. This process is expected to significantly reduce the potential for negative impacts to occur.

4.5.1 Products

One of the potential negative impacts identified relates to a lack of markets for the products. This may be mitigated by WfL by firstly identifying the most suitable product(s) for a particular cooperative and then conducting a thorough analysis of potential markets. As much as possible, demand for the product(s) should not be influenced by trends, as fluctuating demand, particularly in the early stages of the project, may increase financial pressure on the cooperatives. To guarantee that the cooperatives will be able to sell their products, an arrangement with Working World may be made, thus transferring the financial risk to the organisation (Participant A, F and G).

Training the cooperatives to make more than one product would reduce their reliance on having a sustainable market for one product. Should demand for one product fall, other products could be manufactured to maintain the increased income. It is also important that all potential products are tested thoroughly under 'real' conditions to ensure they are able to meet relevant specifications (Participant G). Although considered unlikely, there is the possibility that high demand may result in a shortage of materials. This impact could be mitigated by identifying additional sources for materials such as businesses or other cooperatives (Participant G).

An impact identified with minor significance is the creation of a bad relationship between cooperatives and agents. Although potentially difficult, this may be mitigated by involving the agents in the supply chain of the products (Participant B). As the manufacturing is expected to be conducted in addition to their current sorting activities, mitigation of this impact is not expected to be required unless the project is extremely successful.

Finally, there is a very small possibility that the products may cause injury or damage to property through their end use, or environmental damage as a result of incorrect disposal. The first of these may be avoided by product testing and labelling to ensure users are aware of any potential risks (Participant A). Labelling may also be used to inform users of the best method for recycling or disposal of the product to minimise environmental harm, however the success of this is dependent on the behaviour of users.

4.5.2 Health and Safety

The two negative impacts of major significance relate to the increased health and safety risk to the cooperative through the use of the hot press. The potential for mitigation for these impacts is high, as the probability can be minimised as much as is reasonably possible through training of the cooperatives to correctly use and maintain the hot press. Manufacturing of the hot press by a local organisation or company may avoid difficulties in repairing or sourcing parts, thereby increasing the chances that it will be correctly maintained.

4.5.3 Financial risk

For the cooperatives, purchasing the hot press introduces a financial risk and the possibility that, if the project is not successful, they become unable to repay debt. This could be mitigated by sourcing funding for the hot press so that the cooperatives do not need a loan and therefore avoid the associated financial risk (Participant A).

A potential factor affecting the amount of profit made by the cooperatives is the energy requirement of the hot press and cost of electricity. Whilst the cost of electricity is not able to be altered, reducing demand through improving efficiency or finding other sources of power would reduce the probability of this impact occurring. (Participant D)

4.6 Evaluation of Social Impacts

In total, the SIA identified 31 impacts, of which 16 were direct, 12 indirect and 3 cumulative. As can be seen from **Table 14**, the majority (80%) or the impacts with major significance are positive. All of the major impacts affect either cooperatives or individual *cartoneros*, partially as a result of their high vulnerability, which increases the significance of any impacts affecting them. The two negative impacts classified with major significance are able to be mitigated by implementing the strategies described in **Section 4.5**. It is also worth noting that 61% of the impacts with moderate significance are negative and all of these affect the cooperatives involved with WfL. Most of these, however, are a number of factors resulting in a lower income for the *cartoneros*, which may be avoided by implementing mitigation strategies.

The purpose of the evaluation step is to determine whether the overall impact is acceptable (Barrow, 2000). Due to the number of major impacts that are positive, and the potential for many of the negative impacts to be mitigated, the overall impact of WfL is considered not only acceptable but beneficial. In particular, the benefits are likely to be felt most by cooperatives, who are the intended beneficiaries of the project. The involved universities and organisations (WfL, Working World and other NPOs) are also expected to experience a net positive impact from the project through a number of impacts with moderate and minor significance. The only stakeholder that may be negatively affected is the agents. As the significance of the impact is minor and a mitigation strategy has been identified, this does not change the evaluation of the project as beneficial.

5 Discussion

5.1 SIA Results

5.1.1 Assumptions

The classification of some of the impacts required the following assumptions to be made:

- Only a few cooperatives are currently receiving government support;
- The manufacture and sale of products can be profitable and sustainable;
- A cooperative would either appropriately discipline any member who misused their increased income;
- Cooperatives would return to their former activities if their involvement with WfL is unsuccessful;
- Cooperatives will not lose touch with agents through their involvement with WfL as they will continue with their current sorting activities;
- Any newly formed cooperatives would stay together; and
- No human injury or property damage occurs as a result of accidents involving the hot press.

Based on the information available to the practitioner, these assumptions were considered reasonable. Should circumstances change and any of these become unlikely, the classification of one or more of the impacts may change requiring the impact to be reassessed to ensure that negative impacts are avoided.

In addition to these specific assumptions, the success of WfL's proposal is based on a number of more general assumptions. Firstly, that the hot press is the most appropriate technology for the cooperatives to use to manufacture products. Secondly, it is assumed that the values of each of the cooperatives that become involved share WfL's values and ambitions. Through the use of the selection criteria for cooperatives mentioned in **Section 4.5**, the chances of differences causing problems are minimised as much as possible. Finally, WfL's goal of increasing the income of the *cartoneros* assumes that this is indeed a social benefit. The presence of a correlation between a person's income and their wellbeing has been widely debated in relation to development projects. It is however, thought reasonable to assume that as the *cartoneros* currently have such a low income, providing them to opportunity to reduce the financial pressures on their lives is beneficial.

5.1.2 Limitations

5.1.2.1 Time

Time restrictions on the project influenced the quantity and type of data used for the SIA. With more time, or human resources, additional qualitative data and some quantitative data may have been gathered to improve the reliability of the SIA results. The video interviews used were recorded up to three years ago. As the system was identified as reasonably dynamic, it is likely that some of the comments made at that time are now inaccurate or irrelevant. While this footage is still useful to gain a thorough understanding of the system, it would have been interesting to conduct further interviews with the same stakeholders (where possible). This would have allowed comparisons to be made, giving a greater understanding of natural changes to the system, and also give a more up-to-date picture of the way the system functions.

This SIA has been based exclusively on qualitative data, which, for the proposal being assessed, was considered adequate to provide information on potential social impacts. It is also considered important, however, that the results obtained be able to be communicated to the wider community, in particular to companies and other NPOs. For this purpose, it would have been useful to gather some quantitative data. Given the current perceptions of inaccuracy associated with qualitative data, providing quantitative evidence of the project's success may be useful to demonstrate to external parties the benefits of the project.

Although the SIA may have been more comprehensive if more time was taken, it is also important to consider how delaying the presentation of results may affect the intended beneficiaries. As identified in the literature review, SIA is an ex-ante process, and therefore the implementation of a project should be dependent on the results of the SIA. Increasing the duration of the SIA will delay the start of the project and, as a result, the potential benefits. Whilst attempting to make the SIA as thorough as possible, it is important to consider that changes to the current situation may be best made sooner rather than later, to allow the benefits of a proposal to be felt as soon as possible.

5.1.2.2 Finances

Due to the limited funding available to conduct the SIA, the practitioner was unable to conduct a visit to Buenos Aires. This meant that the data collected using questionnaires came mostly from written responses, rather than face-to-face interviews. From the practitioners experience with this SIA, more interaction between the practitioner and respondent improved the quantity and depth of the answers received. Being able to meet with respondents would therefore have improved the data collected. This is not to say, however, that experts based in Buenos Aires

should not have been used as a data source. Collecting less data from these sources is still considered preferable to a more extensive data collection process with more ‘accessible’ stakeholders who may lack the depth of understanding of the system in Buenos Aires.

Being unable to visit site of the proposal also increased the difficulty for the practitioner to obtain an understanding of the cultural context necessary to predict impacts. This is, however, not thought to have affected the outcomes of the SIA, as the majority of the social impacts were identified by participants who have been to or live in Buenos Aires, not by the practitioner.

5.1.2.3 Independence

As this SIA was supervised by a member of WfL, it is reasonable to question the independence of the SIA process and its findings. The practitioner believes, however, that the other restrictions on the project (resulting in not being able to go to Buenos Aires or collect additional data) had a far greater impact on the outcomes of the SIA than the project supervisor. At all times, the practitioner was encouraged to critique the actions of WfL as it is WfL's primary focus to help the *cartoneros*, rather than implement a potentially socially damaging project at all costs.

5.1.2.4 Qualitative data

A further limitation on the project was the practitioner's lack of experience in dealing with qualitative data. Several aspects of the questionnaire affected the quality of the data obtained from this source such as the number of questions (12, some with multiple sub-questions) and the reasonably technical wording. The practitioner noted that these factors made the questionnaire seem either too time-consuming to provide considered and descriptive answers, or highly technical and therefore beyond the knowledge of the respondent, despite the questions having relatively simple subject matters. Both of these aspects were thought to have contributed to a number of the responses being quite brief.

5.1.2.5 Language

Conducting the SIA within a different country to the site of the WfL project, and in a different language, placed a number of limitations on what was able to be achieved. During the literature review, numerous relevant documents were unable to be used as they were published in Spanish. Obtaining translations for these documents would have significantly increased the cost of the SIA and were therefore not obtained, but may have provided some additional information useful for profiling. The review and collection of data was also affected, with the footage and responses of some stakeholders requiring translation. While the need for translation inevitably does influence the data, the degree to which this affected the outcomes of the SIA was considered insignificant.

5.1.2.6 Identification/Evaluation

No matter how extensive the SIA, it is highly likely that it will not identify all the social impacts which occur, or correctly classify all those that were identified. The evaluation of impacts is a highly subjective process and “*there are often significant differences amongst individuals and communities in how potential impacts are evaluated and the level at which impacts may become acceptable or unacceptable*” Fenton (2005, p18). Carley (1983) states that, as it is impossible to accurately predict impacts, the purpose of SIA is to assist decisions rather than predict the future. The outcomes of this SIA are no exception to this. It is acknowledged that there are likely to be impacts that have not been identified, and some whose significance has been under- or overestimated. The findings are, however, extremely important to guide the future actions of WfL, including the development of the eligibility criteria for cooperatives, additional data gathering and ongoing monitoring of the project's impacts.

5.2 Appraisal of SIA Methodology

The main feature of the methodology developed for this SIA is the flexibility it allows for the practitioner to adapt it to a specific application. Although it is recommended to select the relevant steps prior to commencing, steps may be included or excluded as more information is made available. To begin with, the mitigation step was excluded from the methodology, however, during the initial steps of the SIA, it was identified that this step was relevant to the assessment of WfL and this step was subsequently included. Conversely, assessing institutions was initially included in the methodology, yet was later omitted during the SIA as it was not considered sufficiently relevant.

The selection of steps by the practitioner, rather than being prescribed by an academic or organisation, does introduce the potential for the SIA to be designed poorly, or to serve the purposes of the implementing agency. When selecting steps, it is important not to overemphasise those focussing on impacts and ensure that sufficient data is collected to allow the prediction of impacts to be adequately informed. The integrity of the SIA is therefore more dependent on the practitioner, but this is the case anyway because they are responsible for choosing what data is collected and how. If the SIA methodology and findings used are published and able to be reviewed by interested stakeholders and other interested parties such as other SIA practitioners this should allow the quality of the findings to be publicly reported.

6 Conclusions and Recommendations

6.1 Conclusions

6.1.1 Waste for Life

By commissioning an SIA, WfL has worked to counter concerns cited by Finsterbusch (1995) that development agencies don't fully consider the potential consequences resulting from their projects. From the findings of the SIA, implementation of WfL's proposal is expected to have a net positive impact on following stakeholders:

- Cooperatives;
- Universities, in particular UBA; and
- NPOs, in particular WfL and Working World

6.1.2 SIA Methodology

The appraisal of the methodology developed for this SIA highlighted the following features:

- The flexibility of the methodology is useful for the practitioner, and ensures that resources are not wasted on collected or analysing unnecessary data;
- The more thorough and systemised the data collection process (through the selection of sufficient steps), the easier it is to predict impacts and the more accurate the findings will be; and
- Publishing the findings of the SIA is important firstly to inform interested stakeholders, but also to allow the findings to be reviewed by external sources.

6.2 Recommendations

6.2.1 Waste for Life

1. Conduct a thorough market analysis when potential product(s) is selected prior to the cooperatives beginning the manufacturing process;
2. If possible, get the hot press manufactured locally;
3. Educate users of the hot press to ensure they have a thorough understanding of the risks involved and how these may be mitigated;
4. Conduct an ex-post analysis to check the accuracy of the findings of this SIA; and
5. Investigate applying technology in other cities where there are informal workers performing similar activities. This should only be conducted, however, when the project

in Buenos Aires is sustainable and there are sufficient resources available to support a new project.

6.2.2 Future SIA Methodologies

1. Adapt a general methodology rather than completing steps which are irrelevant to the particular project being assessed;
2. Identify the relevant steps as the first task of the SIA. If it is not clear whether a step is relevant, it should be included until sufficient data is obtained to determine whether it is required. Conversely, omitted steps should be reincluded if information collected during the SIA indicates it may be applicable;
3. Involve a social scientist in the SIA, particularly for impact identification, assessment and evaluation;
4. Visit the site of the proposal during the SIA to gain an improved understanding of the context and collect additional data;
5. When using interviews as a method of data collection, ensure the processes is planned thoroughly. This includes fully considering informant selection, questionnaire length and wording and conducting testing prior to extensive data collection;
6. Where possible, minimise the use of written questions and answers and instead collect data using phone or video calls or face-to-face interviews.
7. Conduct and publish an ex-post analysis that assesses the findings of the SIA.

References

- AVINA FOUNDATION 2008. Solidarity in Sustainable Recycling. Brazil.
- AVINA FOUNDATION 2009. Annual Report.
- BAILLIE, C. & FEINBLATT, E. 2010a. Recycling Technologies and Cooperativism: Waste-for-Life.
- BAILLIE, C. & FEINBLATT, E. 18th May 2010 2010b. *RE: Waste for Life Interview*.
- BAILLIE, C., FEINBLATT, E. & KABO, J. 2010a. Whose project is it anyway? The case of Waste for Life, Argentina.
- BAILLIE, C., FEINBLATT, E., THAMAE, T. & BERRINGTON, E. (eds.) 2010b. *Needs and Feasibility: A Guide for Engineers in Community Projects - The Case of Waste for Life*: Morgan & Claypool.
- BAINES, J., MCCLINTOCK, W., TAYLOR, N. & BUCKENHAM, B. 2003. Using local knowledge. In: BECKER, H. A. & VANCLAY, F. (eds.) *The International Handbook of Social Impact Assessment*. Cheltenham, UK: Edward Elgar.
- BARROW, C. 2000. *Social Impact Assessment - An Introduction*, London, Arnold.
- BECKER, H. A. & VANCLAY, F. (eds.) 2003. *The International Handbook of Social Impact Assessment - Conceptual and Methodological Advances*, Cheltenham, UK: Edward Elgar.
- BIJLSMA, B. & HORDIJK, D. M. 2009. Open Streets but Closed Minds: Differentiated Exclusion of Buenos Aires' *Cartoneros*. *10th N-AERUS Conference*. Rotterdam: Institute for Housing and Urban Development Studies.
- BURDGE, R. 2004. *The Concepts, Process and Methods of Social Impact Assessment*, Middleton, Wisconsin, Social Ecology Press.
- BURDGE, R. J. & VANCLAY, F. 2004. The Future Practice of Social Impact Assessment. In: BURDGE, R. J. (ed.) *The Concepts, Process and Methods of Social Impact Assessment*. Middleton, Wisconsin: Social Ecology Press.
- BURTON, G. 2005. *Local government in Argentina* [Online]. Available: http://www.citymayors.com/government/argentina_government.html [Accessed 25 October 2010].
- CARLEY, M. 1983. A Review of Selected Methods. In: FINSTERBUSCH, K., LLEWELLYN, L. & WOLF, C. P. (eds.) *Social Impact Assessment Methods*. Beverly Hills: Sage Publications.
- CENTRE FOR GOOD GOVERNANCE 2006. A Comprehensive Guide for Social Impact Assessment.
- CHEVALIER, J. & BUCKLES, D. 2008. SAS2 A Guide to Collaborative Inquiry and Social Engagement. In: INTERNATIONAL DEVELOPMENT RESEARCH CENTRE (ed.). Sage Publications.
- CHRONOPOULOS, T. 2006. Neo-liberal reform and urban space: The *cartoneros* of Buenos Aires, 2001-2005. *City*, 10, 167-182.
- CLARIN 2005. Legislatura de la ciudad de Buenos Aires. Grupo Clarin.
- DENQ, F. & ALTENHOFEL, J. 1997. Social Impact Assessments Conducted by Federal Agencies: An Evaluation. *Impact Assessment*, 15, 209.
- DEPARTMENT OF INFRASTRUCTURE AND PLANNING 2010. Social impact assessment - Preparing a social impact management plan: draft guideline. Queensland Government.
- DIAZ, M. I. 2009. *Movimiento de Trabajadores Excluidos* [Online]. Available: http://www.riless.org/experiencias_desarrollo.shtml?x=44462 [Accessed 16 June 2010].
- DIETZ, T. 1987. Theory and Method in Social Impact Assessment. *Sociological Inquiry*, 57, 54-69.
- EDWARDS, T. L. 2008. *Argentina: A Global Studies Handbook*, Santa Barbara, California, ABC-CLIO Inc.

- EL CEIBO. 2010. *Argentina: Cartoneros de Buenos Aires denuncian y se movilizan* [Online]. Available: <http://red-latina-sin-fronteras.lacoctelera.net/post/2010/04/14/argentina-cartoneros-buenos-aires-denuncian-y-se-movilizan> [Accessed 16 June 2010].
- ESTEVEZ, A. M. & VANCLAY, F. 2009. Social Development Needs Analysis as a tool for SIA to guide corporate-community investment: Application in the minerals industry. *Environmental Impact Assessment Review*, 29, 137-145.
- EUROPA WORLD ONLINE. 2010. *Area and Population (Argentina)* [Online]. London: Routledge. Available: <http://www.europaworld.com/pub/entry/ar.ss.2> [Accessed 10 October 2010].
- FENTON, M. 2005. Guidebook on Social Impact Assessment. In: NEW SOUTH WALES DEPARTEMENT OF PLANNING (ed.). Townsville, Queensland.
- FINSTERBUSCH, K. 1995. In Praise of SIA. *Impact Assessment*, 13, 229-252.
- FINSTERBUSCH, K., INGERSOLL, J. & LLEWELLYN, L. 1990. *Methods for Social Analysis in Developing Countries*, Boulder, Colorado, USA, Westview Press.
- FINSTERBUSCH, K., LLEWELLYN, L. & WOLF, C. (eds.) 1983. *Social Impact Assessment Methods*, Beverley Hills, California: Sage Publications.
- GALASSO, E. & RAVALLION, M. 2004. Social Protection in a Crisis: Argentina's Plan Jefes y Jefas. *The World Bank Economic Review*, 18, 367-399.
- GREENPEACE. 2010a. *About Greenpeace* [Online]. Available: <http://www.greenpeace.org/international/en/about/> [Accessed 15 July 2010].
- GREENPEACE. 2010b. *Argentina* [Online]. Available: <http://www.greenpeace.org/argentina/> [Accessed 22 October 2010].
- INTER-AMERICAN DEVELOPMENT BANK 2003. *Economic Instruments for Solid Waste Management: Global Review and Applications for Latin America and the Caribbean. Regional Policy Dialogue Study Series*. Washington DC.
- INTERNATIONAL CO-OPERATIVE ALLIANCE. 2007. *Statement on the Co-operative Identity* [Online]. Geneva, Switzerland. Available: <http://www.ica.coop/coop/principles.html> [Accessed 1/ 10/ 2010].
- INTERNATIONAL CO-OPERATIVE ALLIANCE. 2010. *What is a co-operative?* [Online]. Geneva, Switzerland. Available: <http://www.ica.coop/coop/index.html> [Accessed 1/ 10/ 2010].
- JOYCE, S. & MACFARLANE, M. 2001. *Social Impact Assessment in the Mining Industry: Current Situation and Future Directions*. International Institute for Environment and Development.
- KASMANN, E. 2009. *Ex-Ante Poverty and Social Impact Assessment 4 the Crisis*. Asian Development Bank.
- LINDHQUIST, T., MANOMAIVIBOOL, P. & TOJO, N. 2008. *Extended Producer Responsibility in the Latin American context - The Management of Waste Electrical and Electronic Equipment in Argentina*. Lund, Sweden: Greenpeace International.
- MACFARLANE, M. 1999. *An Evaluation of Social Impact Assessment Methodologies in the Mining Industry*. Univeristy of Bath.
- MCDONOUGH, W. & BRAUNGART, M. 2002. *Cradle to Cradle: remaking the way we make things*, New York, North Point Press.
- MEDINA, M. 2000. Scavenger Cooperatives in Asia and Latin America. *Resources, Conservation and Recycling*, 31, 51-69.
- NEGRETTO, G. L. 1998. *Constitution-Making and Institutional Design: The Reform of Presidentialism in the Argentine Constitution of 1994. Meeting of the Latin American Studies Association*. Chicago, Illinois.
- NICAISE, I. & HOLMAN, K. 2008. *Social Impact Assessment*. European Commission.
- OANDA CORPORATION. 2010. *Online Conversion Currency* [Online]. Available: <http://www.oanda.com/convert/classic?user=onlineconversion&lang=en> [Accessed 10 October 2010].

- PAN AMERICAN HEALTH ORGANISATION 2005. Report on the Regional Evaluation of Municipal Solid Waste Management Services in Latin America and the Caribbean. Washington DC: World Health Organisation.
- QUEENS UNIVERSITY 2009. 09 Annual Report. Kingston, Ontario.
- RHODE ISLAND SCHOOL OF DESIGN. n.d. *About RISD* [Online]. Available: <http://www.risd.edu/aboutrisd.cfm> [Accessed 17 October 2010].
- ROWAN, M. 2009. Refining the attribution of significance in social impact assessment. *Impact Assessment and Project Appraisal*, 27, 185-191.
- SHADEMANI, R. & VON SCHIRNDING, Y. 2002. Health Impact Assessment in Development Policy and Planning. World Health Organisation.
- SUTHEERAWATTHANA, P. & MINATO, T. 2010. Incorporating social groups' responses in a descriptive model for second- and higher-order impact identification. *Environmental Impact Assessment Review*, 30, 120-126.
- TANG, B., WONG, S. & LAU, M. C. 2008. Social impact assessment and public participation in China: A case study of land requisition in Guangzhou. *Environmental Impact Assessment Review*, 28, 57-72.
- THE INTERORGANIZATIONAL COMMITTEE ON GUIDELINE AND PRINCIPLES FOR SOCIAL IMPACT ASSESSMENT 1994. Guidelines and Principles for Social Impact Assessment.
- THE INTERORGANIZATIONAL COMMITTEE ON PRICIPLES AND GUIDELINES FOR SOCIAL IMPACT ASSESSMENT 2003. US priciples and guidelines. *Impact Assessment and Project Appraisal*, 21, 231-250.
- THE INTERORGANIZATIONAL COMMITTEE ON PRINCIPLES AND GUIDELINES FOR SOCIAL IMPACT ASSESSMENT 2003. US priciples and guidelines. *Impact Assessment and Project Appraisal*, 21, 231-250.
- THE UNIVERISTY OF WESTERN AUSTRALIA. 2010. *The University* [Online]. Available: <http://www.uwa.edu.au/university> [Accessed 17 October 2010].
- THE WORKING WORLD. Available: <http://www.theworkingworld.org/index.php?action=labase> [Accessed 9 July 2010].
- THE WORLD BANK 2003. A User's Guide to Poverty and Social Impact Analysis. Washington DC, USA: The World Bank.
- THE WORLD BANK 2007. Informality: Exit and Exclusion. Brasilia.
- THE WORLD BANK GROUP. 2010a. *Challenge* [Online]. Available: <http://go.worldbank.org/DM4A38OWJ0> [Accessed 29 April 2010].
- THE WORLD BANK GROUP. 2010b. *Operations* [Online]. Available: <http://go.worldbank.org/1YXPMBNDO0> [Accessed 29 April 2010].
- UNITED NATIONS ENVIRONMENT PROGRAMME 2002. Social Impact Assessment.
- UNIVERSITY OF BUENOS AIRES. n.d. *About UBA* [Online]. Buenos Aires. Available: <http://www.uba.ar/ingles/about/index.php> [Accessed 17 October 2010].
- VAN HECK, B. 2003. Participatory Development: Guidelines on Beneficiary Participation in Agricultural and Rural Development. Rome, Italy: Food and Agriculture Organization of the United Nations.
- VAN SCHOOTEN, M., VANCLAY, F. & SLOOTWEG, R. 2003. Conceptualizing social change processes and social impacts. In: BECKER, H. A. & VANCLAY, F. (eds.) *The International Handbook of Social Impact Assessment*. Cheltenham, UK: Edward Elgar.
- VANCLAY, F. 2002. Conceptualising social impacts. *Environmental Impact Assessment Review*, 22, 183-211.
- VANCLAY, F. 2003a. Conceptual and methodological advances in social impact assessment. In: BECKER, H. A. & VANCLAY, F. (eds.) *The International Handbook of Social Impact Assessment*. Cheltenham, UK: Edward Elgar.
- VANCLAY, F. 2003b. SIA principles - International Principles for Social Impact Assessment. *Impact Assessment and Project Appraisal*, 21.

- WASTE FOR LIFE. n.d. *Partners* [Online]. Available: http://wasteforlife.org/?page_id=153
[Accessed 17 October 2010].
- WILDMAN, P. & BAKER, G. 1985. *The Social Impact Assessment Handbook*, Roseville, NSW, Impacts Press.
- WOLF, C. P. 1983. Social Impact Assessment: A Methodological Overview. *In*: FINSTERBUSCH, K., LLEWELLYN, L. G. & WOLF, C. P. (eds.) *Social Impact Assessment Methods*. Beverley Hills, California: Sage Publications.

Appendix 1 Methodology Summary

Author	Marsden and Oakley	Dietz	Wildman and Baker	Taylor and Bryan in Finsterbusch, Ingersoll & Llewellyn	Finsterbusch, Llewellyn & Wolf	Barrow	Becker and Vanclay	Finsterbusch	NSW Dept of Planning	World Health Organisation	Interorganizational Committee on Guidelines and Principles for SIA	Interorganizational Committee on Guidelines and Principles for SIA	United Nations Environment Program	Centre for Good Governance	Centre for Good Governance	Nicaise (European Commission)	World Bank	Summary
Year	1990	1987	1985	1990	1983	2000	2003	1995	2005	2002	1994	2003	2002	2006	2006	2008	2003	
Source	Academic	Academic	Academic	Academic/practitioner	Academic	Academic	Academic	Academic	Australian state government	UN organisation	International committee	International committee	UN organisation	Indian state government organisation	Indian state government organisation	EU executive body	International financial institution	
Steps				1. Scoping	1. Scoping	1. Scoping	1. Scoping	4. Scoping	1. Scoping	3. Scoping	4. Scoping	4. Scoping	4. Scoping	4. Scoping	4. Scoping of impacts		2. Identify stakeholders	Scoping
		1. Identification			2. Problem Identification											1. Define problem	1. As the right questions	Problem Identification
																2. Establish policy objectives		Establish policy objectives
								1. Public Involvement Plan			1. Public Involvement Plan	1. Public Involvement Plan	1. Public involvement plan	1. Public Participation	1. Public participation			Public involvement plan
	1. Data collection		1. Community Profiling	2. Profiling	4. Profiling	3. Profiling	2. Profiling	3. Obtain information on existing relevant conditions	2. Profiling	2. History and baseline conditions	3. Establish baseline conditions	3. Establish baseline conditions	3. Profile of baseline condition	3. Community profile	3. Profile of baseline condition		5. Gather data and information	Profiling
																	3. Understand transmission channels	Understand transmission channels
																	4. Assess institutions	Assess institutions
				3. Formulation of alternatives	3. Formulation of alternatives	2. Formulation of alternatives	3. Formulation of Alternatives	2. Obtain information on alternatives		1. Identification of alternatives	2. Identify alternatives	2. Identify alternatives	2. Identification of alternatives	2. Identification of alternatives	2. Identification of alternatives	3. Formulation of alternatives		Identification of alternatives
	2. Systematization and analysis	2. Analysis	2. Likely Impact Projection	4. Projection / estimation of effects	5. Projection	4. Projection	4. Projection and estimation of effects	5. Projection of estimated effects	3. Prediction	4. Projection of estimated effects	5. Projection of estimated effects	5. Projection of estimated effects	5. Projection of estimated effects	5. Identification and analysis of estimated effects	5. Identification and analysis of estimated effects	4. Measure impact		Projection of estimated effects
								7. Estimate indirect and cumulative impacts		6. Second order and cumulative impacts	7. Indirect and cumulative impacts	7. Indirect and cumulative impacts	7. Estimate indirect and cumulative impacts		7. Indirect and cumulative impacts			Estimate indirect and cumulative impacts
			3. Impact Assessment		6. Assessment	5. Assessment		6. Predict how affected parties will respond		5. Projecting responses to project/policy effects (impacts)	6. Predict responses to impacts	6. Predict responses to impacts	6. Prediction and evaluation of responses to impacts	5. Identification and analysis of estimated effects	6. Prediction and evaluation of responses to impacts		6. Analyse impacts	Impact Assessment
								8. Recommend changes in the action or alternatives		7. Changes in alternatives	8. Changes in Alternatives	8. Changes in Alternatives	8. Changes to alternatives	6. Formulation of alternatives				Changes to alternatives
																	7. Contemplate	Contemplate enhancement and

Author	Marsden and Oakley	Dietz	Wildman and Baker	Taylor and Bryan in Finsterbusch, Ingersoll & Llewellyn	Finsterbusch, Llewellyn & Wolf	Barrow	Becker and Vanclay	Finsterbusch	NSW Dept of Planning	World Health Organisation	Interorganizational Committee on Guidelines and Principles for SIA	Interorganizational Committee on Guidelines and Principles for SIA	United Nations Environment Program	Centre for Good Governance	Centre for Good Governance	Nicaise (European Commission)	World Bank	Summary
																	enhancement and compensation measures	compensation measures
																	8. Assess risks	Assess risks
		3. Evaluation	4. (a) Impact Evaluation (b) Option Selection	6. Evaluation of effects	7. Evaluation	6. Evaluation	6. Evaluation		4. Evaluation				6. Prediction and evaluation of responses to impacts		8. Evaluation of alternatives and impact mitigation	5. Compare options	9. Monitor and evaluate impacts	Evaluation
			5. Implementation, Monitoring and Feedback															Implementation of project
				5. Monitoring, mitigation and management of impacts	8. Mitigation	7. Mitigation	5. Monitoring for mitigation and management	9. Mitigate negative impacts	5. Mitigation	8. Mitigation/enhancement activity	9. Mitigation	9. Mitigation	9. Mitigation	7. Mitigation	8. Evaluation of alternatives and impact mitigation			Mitigation
			5. Implementation, Monitoring and Feedback	5. Monitoring , mitigation and management of impacts	9. Monitoring	8. Monitoring	5. Monitoring for mitigation and management	10. Monitoring	6. Monitoring	9. Monitoring	10. Monitoring	10. Monitoring	10. Monitoring	8. Monitoring	9. Monitoring plan	6. Establish indicators for monitoring	9. Monitor and evaluate impacts	Monitoring
						9. Ex-post audit											10. Debate policy and incorporate feedback	Ex-post audit
			5. Implementation, Monitoring and Feedback															Report findings
				5. Monitoring, mitigation and management of impacts	10. Management		5. Monitoring for mitigation and management											Management

Waste for Life - Social Impact Assessment

Background:

Waste for Life (WfL) is a loosely joined network of professionals and students working to develop poverty-reducing solutions to environmental problems. In Buenos Aires, WfL is focused on helping cooperatives of *cartoneros* ('waste pickers') who collect and sell plastic and paper as their sole source of income. A SIA methodology has been developed which will be used to assess the social impacts of WfL's involvement with the *cartoneros*. The results will determine future actions of WfL and provide a case study for the use of SIA in other projects.

The aim of this project is to predict the social impacts of Waste for Life in Buenos Aires on all stakeholders, including individuals, groups and organisations. The questions below are intended to provide information which will be used to conduct the assessment. The work completed to date has identified the following stakeholders:

- Individual *cartoneros*
- Cooperatives
 - El Ceibo
 - Bajo Flores
 - Etilplast
 - Villa Angelica
 - Avellenada
 - Reciclando Suenos
 - El Alamo
 - Abuela Naturaleza
- Social Factories
 - Renacer Lanzone
- Trucking companies
 - 5 private
 - 1 government
- CEAMSE
- Government
- University of Buenos Aires
 - Faculty of Architecture, Design and Urban Planning (FADU)
 - National Institute of Technical Innovation (INTI)
- Non-government Organisations
 - Greenpeace
 - Waste for Life
 - La Base
 - Avina

- Industry
- Managers/ owners of Chinese sorting units/ recycling factories
- General Public
 - Households
 - Businesses/ managers
- ERTs
 - Union Solidaria de Trabajadores (UST)
 - 19 de diciembre

Questions:

Where relevant, these should be answered with regard to each of the stakeholders listed above.

1. Who do you think will be affected by WfL?
2. How may they be affected? (Positively or negatively)
3. Describe the current social profile (ie structure of relationships between stakeholders)
4. Is this likely to stay relatively unchanged in the future?
5. What is the structure of the
 - a) Market for recyclables
 - b) Government
 - c) La Base
 - d) Greenpeace
 - e) Waste for Life
 - f) Other NGOs
 - g) Other relevant organizations
6. What might happen to whom? (What are the potential and expected impacts)
7. Through which channels are impacts expected to travel?
8. What do you think the indirect and/ or cumulative impacts will be?
9. What are the risks (what could go wrong)?
10. How severe are the consequences?
11. On what assumptions is the success of the project based?
12. What problems do you anticipate and how might these be avoided?